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NIST Intercomparison Exercise Program for Organic Contaminants in the Marine Environment: Description and Results of 2003 Organic Intercomparison Exercises

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Abstract

In support of marine monitoring measurement programs, the National Institute of Standards and Technology (NIST) conducts yearly interlaboratory comparison exercises to provide one mechanism for participating laboratories/monitoring programs to evaluate the quality and comparability of their performance in measuring selected organic contaminants in environmental samples. In this report, results of the 2003 exercises of the NIST Intercomparison Exercise Program for Organic Contaminants in the Marine Environment are described in which selected polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCB) congeners, and chlorinated pesticides were determined in Mussel Tissue XI and Marine Sediment XII exercise materials. The analytical methods used by each participating laboratory in this performance-based program are also summarized.

Introduction

The preparation and distribution of two materials, Mussel Tissue XI (QA03TIS11) and Marine Sediment XII (QA03SED12), used in interlaboratory comparison exercises in 2003 for the National Institute of Standards and Technology (NIST) Intercomparison Exercise Program for Organic Contaminants in the Marine Environment and the results of these exercises are described in this report. The analytical methods used by each participating laboratory are also summarized.

Tools and mechanisms for the assessment of data produced by laboratories providing environmental analyses are critical because decision-making based on inaccurate results or data of unknown quality can have significant economic and health consequences. NIST provides a variety of activities in support of environmental monitoring programs for organic contaminants. The largest of these programs was initiated and funded in part for 12 years (until 1999) by the National Oceanic and Atmospheric Administration (NOAA) National Status and Trends (NS&T) Marine Monitoring Program [1,2,3]. The Environmental Protection Agency (EPA) Environmental Monitoring and Assessment Program (EMAP) also participated in the NIST/NOAA NS&T effort for a number of years. Private sector and other laboratories that could not be accommodated under the NOAA, EPA, and NIST funding have reimbursed NIST for participation costs and have participated in these exercises and workshops as part of the NIST Intercomparison Exercise Program for Organic Contaminants in the Marine Environment. NIST is now continuing this program on a pay-to-participate basis. Through this program, NIST provides mechanisms for assessing the interlaboratory and temporal comparability of data with the goal of improving measurements for the monitoring of organic contaminants such as polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCB) congeners, and chlorinated pesticides in bivalve, sediment, and fish samples. This program includes the development of improved analytical methods, production of needed NIST Standard Reference Materials (SRMs) and other control materials, conduct of annual interlaboratory comparison exercises, and the coordination of workshops to discuss the results of these exercises and to provide a forum for cooperative problem-solving efforts by participants. Current participants represent multi-laboratory monitoring programs as well as a number of individual programs, and include federal, state/municipal, university/college, private sector, and international laboratories. In this performance-based program, each participating laboratory uses its current methods for analysis of similar materials for its program customers.

For the annual intercomparison exercises, samples of two natural-matrix, homogeneous materials that are derived from the marine environment and that have not been fortified with any of the target analytes are analyzed by the participating laboratories. Typical materials, such as mussel or fish tissue homogenates or wetted marine sediment, have levels of target analytes in the 1 ng/g to 15000 ng/g range. The target analytes are listed in Table 1.

Numerical indices, z- and p-scores, are used to assess and track laboratory performance for accuracy and precision, respectively, and to provide a mechanism for assessing the comparability

of data being produced by the participating laboratories for over 75 target analytes, total organic carbon (TOC), percent total extractable organics (TEO), and percent moisture.

Sources and Preparation of Materials used in 2003 Intercomparison Exercises

Mussel Tissue XI. Mussel Tissue XI was the same material as Mussel Tissue IX (QA98TIS9) used as the 1998 exercise material [4] and Mussel Tissue IV (QA92TIS4) used as the 1992 exercise material [3]. This sample is a cryogenically homogenized “fresh” material prepared from mussels collected in Boston Harbor in February 1992. Colorless, 2-oz, wide-mouth, glass bottles were rinsed with deionized water, thermally cleaned at 450 °C for 12 h in a ventilated oven, cooled, capped, and labeled. Each label contained the material's name and code (Mussel Tissue XI, QA03TIS11) as well as an individual bottle number. The Teflon liners of the phenolic screw caps had been removed from the caps, cleaned with hexane, dried, and reinserted in the caps. The bottles of Mussel Tissue IV were emptied into new precleaned, prelabeled (Mussel Tissue XI, QA03TIS11 with individual bottle numbers), precooled (-80 °C) bottles. This sample is a cryogenically homogenized “fresh” material prepared from mussels collected in Boston Harbor in February 1992.

Each of the three bottles sent to each participant contained approximately 17 g (wet-mass basis) of Mussel Tissue XI. This frozen mussel tissue homogenate material had not been enriched or spiked.

Marine Sediment XII. Marine Sediment XII was prepared from Certified Reference Material (CRM) PACS-2 (Marine Sediment Reference Material for Trace Elements and Other Constituents, National Research Council Canada), a marine sediment that was collected from Esquimalt Harbor in British Columbia and has been freeze-dried, passed through a No. 120 (125 µm) screen, blended, bottled, and radiation sterilized (2.5 mrad). PACS-2 was also used to prepare the sediment used in the 1998 exercise (Marine Sediment VIII, QA98SED8) [4]. The sediment material was issued as a wet sediment to more closely match the matrix of wet sediments routinely analyzed by the laboratories.

Colorless, 2-oz, wide-mouth, glass bottles were rinsed with deionized water, thermally cleaned at 450 °C for 12 h in a ventilated oven, cooled, capped, and labeled. Each label contained the material's name and code (Marine Sediment XII, QA03SED12) as well as an individual bottle number. The Teflon liners of the phenolic screw caps had been removed from the caps, cleaned with hexane, dried, and reinserted in the caps. A calibrated toploader balance (resolution of 0.01 g) was used for weighing the PACS-2 sediment and water. For each sample, 11.00 g of PACS-2 sediment (as received) was weighed into a tared bottle. The bottle was then capped and stored in the dark at room temperature. Approximately four days before samples were to be shipped to laboratories participating in the intercomparison exercise, 9.0 g of HPLC-grade water were added by pipet to each tared bottle of sediment. (Preliminary trials had shown that a minimum of 9 g of water would moisten 11 g of this sediment.) The mass of sediment and water in each bottle were recorded. Each sample was tilted by hand until no dry sediment was visible. Only a

very small amount of water was observed on the top of the wet sediment. After 24 h at room temperature (in the dark), followed by approximately 4 h at -20 °C, each bottle of material was stored at -80 °C until shipped. The bottles were never inverted until the wet samples had been frozen in the bottom of the bottles. The material was not enriched or spiked with any of the analytes of interest in this intercomparison exercise.

Storage and Distribution of Materials

Each bottle of Mussel Tissue XI and Marine Sediment XII material was stored at -80 °C until shipped via overnight delivery to participating laboratories. Instructions for the storage and use of the exercise material and a diskette with files for electronic submission of data were included with each set of material shipped. These instructions are reproduced in Appendices A and B.

Each laboratory participating in these intercomparison exercises was sent the following by overnight delivery:

Exercise 1: Mussel Tissue XI (QA03TIS11)

- Three bottles of Mussel Tissue XI material (shipped on dry ice)
- Three bottles of SRM 1974b, Organics in Mussel Tissue, (shipped on dry ice)
- Description of the materials and storage/use/reporting instructions for the exercise (See Appendix A.)
- Data diskette with files for the reporting of results

Exercise 2: Marine Sediment XII (QA02SED11)

- Three bottles of Marine Sediment XII material (shipped on dry ice)
- Description of the materials and storage/use/reporting instructions for the exercise (See Appendix B.)
- Data diskette with files for the reporting of results

In the letter accompanying each shipment each participant was asked to analyze each of three replicate samples (one from each jar) to provide a more realistic assessment of laboratory precision and, if possible, to concurrently analyze the NIST SRM 1974b [5] with Mussel Tissue XI and NIST SRM 1941b Organics in Marine Sediment [6] with Marine Sediment XII.

Evaluation of Exercise Results

Establishment of the Assigned Values

The following guidelines were used by the NIST exercise coordinators for the establishment of the exercise "Assigned Values" for these two exercises. Each laboratory's performance on concurrent reference material analyses was used to determine if that laboratory's results would be eligible for inclusion in the calculation of the exercise assigned value for the unknown

material for a particular analyte. The results reported for the unknown materials from laboratories that did not report results for the reference materials were not used in these calculations. After the exercise assigned values, standard deviations, and 95% confidence limits had been calculated, all reported results for the Mussel Tissue XI and Marine Sediment XII materials were evaluated relative to the exercise assigned values.

Laboratory data submission: Each participating laboratory was to submit data from three replicate determinations of the “unknown” materials (Mussel Tissue XI and Marine Sediment XII) and was requested to report results of concurrent analyses of NIST SRM 1974b, a cryogenically homogenized mussel tissue reference material, and SRM 1941b, a marine sediment reference material. Laboratories were requested to report these results to three significant figures, and to provide brief descriptions of their extraction, cleanup, and analytical procedures.

Determination of laboratory analyte means: For each laboratory, the laboratory analyte mean of the three sample results (S1, S2, and S3) was calculated for each analyte. Non-numerical data were treated as follows: A mean “<value” was used when three “<values” were reported; NA (not analyzed/determined) was used for three reported NA's; and, if the reported results were of mixed type, e.g., S1 and S2 were numerical values and S3 was reported as “<value”, the two similar “types” were used to either determine the mean or to set a non-numerical descriptor.

Determination of assigned values: The assigned values are the means of the acceptable data as defined here. For a particular analyte, the performance on the reference material was deemed acceptable for the purpose of this exercise if the laboratory result was within 30 % of the upper and lower limits of the confidence interval for analytes listed in the Certificates of Analysis for SRM 1974b and SRM 1941b. For each analyte of interest not certified for these materials, a “target” concentration and the associated uncertainty were calculated. The targets for SRM 1974b were based on reference concentrations for SRM 1974b and on results of the 2000 exercise in which SRM 1974b was used as an unknown. The targets for SRM 1941b were based on results of the 1999 exercise in which SRM 1941b was used as the unknown material. Laboratory results within target upper and lower limits, typically 30 % to 40 %, of these concentrations were deemed acceptable for this exercise. If a laboratory demonstrated acceptable performance on a particular analyte in the reference material, that laboratory's results for that analyte in the corresponding “unknown” exercise material was then used in the calculation of the analyte's exercise assigned value, unless it was deemed an outlier. For evaluation of potential outliers, statistical tests and expert analyst judgement were used after viewing both normal and log normal plots of the data. This judgement utilized knowledge of potential coeluters based on the laboratory's reported methods. In instances in which the analyte concentration was below the detection limit of most participating laboratories, no exercise assigned value was calculated. In data sets where a number of laboratories report results as “not detected” at various detection limits, there is no consensus as to what numerical value should be assigned to these results in the computation of grand means, etc.; e.g., “0,” half Detection Limit (DL), and the DL value itself have all been used and the choice is influenced by the particular data set.

Reported Results

Laboratories were assigned numerical identification codes in order of receipt of data with the exception of NIST, which is Laboratory 1 in these exercises. A laboratory was assigned the same code for each material. There are three results from NIST reported: 1a and 1b both generated in the NIST Gaithersburg laboratory and 1c generated in the NIST Charleston laboratory. For the NIST data, the following extraction methods were used: pressurized fluid extraction (PFE) with dichloromethane for 1a; Soxhlet extraction with dichloromethane for the 1b; and PFE with dichloromethane for 1c. For the PAHs, methods 1a, 1b, and 1c used gas chromatography/mass spectrometry (GC/MS) for analysis with either a proprietary nonpolar phase (1a) or a 50 % (mole fraction) phenyl phase (1b and 1c). For the chlorinated analytes, 1a and 1b used GC/MS with the proprietary nonpolar phase while the 1c method used GC with electron capture detection (GC-ECD), combining results obtained with a 5 % (mole fraction) phenyl phase and a proprietary nonpolar phase.

A laboratory was assigned the same code for each material. The laboratory mean replicate data are shown in Tables 2 to 4 and Tables 5 to 7 for the Mussel Tissue XI and SRM 1974b, respectively, and in Tables 8 to 10 and 11 to 13 for Marine Sediment XII and SRM 1941b, respectively. Included in the means tables for Mussel Tissue XI and Marine Sediment XII are the exercise assigned values, the standard deviation of the assigned value, the percent relative standard deviation (% RSD), and the calculated 95 % confidence limit of the assigned value for the percent water, percent total extractable organics, TEO (mussel tissue), total organic carbon, TOC (sediment), PAHs, chlorinated pesticides, and PCB congeners. Notes included by a laboratory with its data are listed in Appendices C (Mussel Tissue XI) and D (Marine Sediment XII). Summaries of the methods used by each laboratory are in Appendices E (Mussel Tissue XI) and F (Marine Sediment XII). Tables 5 through 7 and 11 through 13 summarize the data received from the participating laboratories for SRM 1974b and 1941b, respectively. The certified and target values for the analytes of interest are also shown in these tables. For the Mussel Tissue XI and SRM 1974b, laboratory 9 originally submitted their data in terms of dry mass. The laboratory sent revised data (lab 9 rev in Tables 2 through 7) in terms of wet mass.

In Appendices G (Mussel Tissue XI) and H (Marine Sediment XII), charts of the mean numerical results reported by each laboratory for each analyte are shown for the exercise material and the corresponding reference material. In these Appendices, only lab 9's original data submissions are included. The revised data from Lab 9 (Lab 9 rev) should be used in evaluating their performance.

Performance Scores

The exercise coordinators recognize that different programs have different data quality needs. The acceptability of the results submitted by a particular laboratory will be decided by the

individual program(s) for which the laboratory provides data. Typically, the program will use these exercise results in conjunction with the laboratory's performance in the analysis of certified reference materials and/or control materials, and of other quality assurance samples. These exercise results are exhibited in a number of ways in this report to facilitate their use by these programs in their acceptability assessments.

IUPAC guidelines [7] describe the use of z-scores and p-scores for assessment of accuracy and precision in intercomparison exercises such as those described in this report. These indices assess the difference between the result of the laboratory and the exercise assigned value and can be used, with caution, to compare performance on different analytes and on different materials.

Accuracy Assessment (z-score)

$$\text{z-score} = (\text{bias estimate})/(\text{performance criterion}) = (x - X)/\sigma$$

where x is the individual laboratory result, X is the "Exercise Assigned Value," and σ is the target value for standard deviation.

As described in the IUPAC guidelines, the choice of σ is dependent upon data quality objectives of a particular program. It can be "fixed" and arrived at by perception, prescription, or reference to validated methodology (e.g., $\sigma = 0.025 X$; X is the exercise assigned value,), or it can be an estimate of the actual variation (e.g., the calculated sample standard deviation, s , from the exercise data). The "fixed" performance criterion is more useful in the comparison of a laboratory's performance on different materials while the use of the actual variation may be more useful within a given exercise, for example, if the determination of a particular analyte is exceptionally problematic.

We have calculated and reported z-scores using the fixed performance criterion for each analyte for each laboratory. At a previous workshop, it was decided to use "25 % of the exercise assigned value" as the fixed target value for standard deviation for this program. The z-scores calculated for these exercises can thus be interpreted as shown in the following examples:

z-score (25 % X):

+1 \Rightarrow laboratory result is 25 % higher than the assigned value

-2 \Rightarrow laboratory result is 50 % lower than the assigned value

From a scientific point of view, IUPAC does not recommend the classification of z-scores but allows that a common classification is:

$ z \leq 2$	Satisfactory
$2 < z < 3$	Questionable
$ z \geq 3$	Unsatisfactory

Tables 14 through 16 summarize the z-scores (25 %) for each laboratory for each reported analyte in Mussel Tissue XI while Tables 17 through 19 summarize the z-scores (25 %) for each laboratory for each reported analyte in Marine Sediment XII.

Precision Assessment (p-score)

$$\text{p-score} = \sigma_{\text{lab}} / \sigma_{\text{target}}$$

Prior to the 1994 exercises, participating laboratories typically analyzed the three replicate samples for an exercise with the same sample set, i.e., one set of samples with the same blank, calibration curve, etc. applicable for each. Since the repeatability for replicates within a set generally shows better reproducibility than for replicates across different sets, this does not result in data that are very useful for realistic uncertainty assessment. Since 1994, laboratories have been requested to process each replicate in a different sample set for uncertainty assessment. For the calculation of p-scores for this program, the σ values used are coefficients of variation (CV calculated as relative standard deviations) with the current target σ (CV) for the three replicates being 15 %.

Tables 20 through 22 summarize the p-scores (15 %) for each laboratory for each reported analyte in Mussel Tissue XI while Tables 23 through 25 summarize the p-scores (15 %) for each laboratory for each reported analyte in Marine Sediment XII.

Discussion

Laboratories were requested to quantify 26 PAHs, 25 chlorinated pesticides, and 25 PCB congeners in this year's exercise. A total of 17 sets of results were submitted for Mussel Tissue XI, and 21 sets of results were submitted for Marine Sediment XII. For the sediment exercise, one laboratory (3) reported data for SRM 1941a Organics in Marine Sediment as the control material, and four laboratories (5, 6, 17, and 18) reported data for SRM 1944 as the control material. Their data were evaluated based on the certified and target values for these SRMs (see Evaluation of Exercise Results above). Laboratories 12 and 14 did not submit data for a sediment reference material so the data from these laboratories were not used for the determination of the exercise assigned values for Marine Sediment XII.

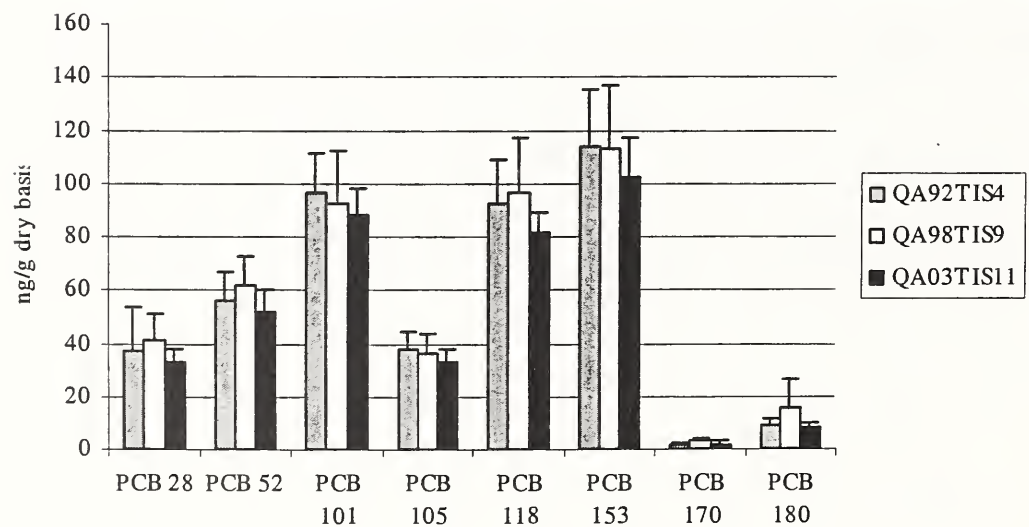
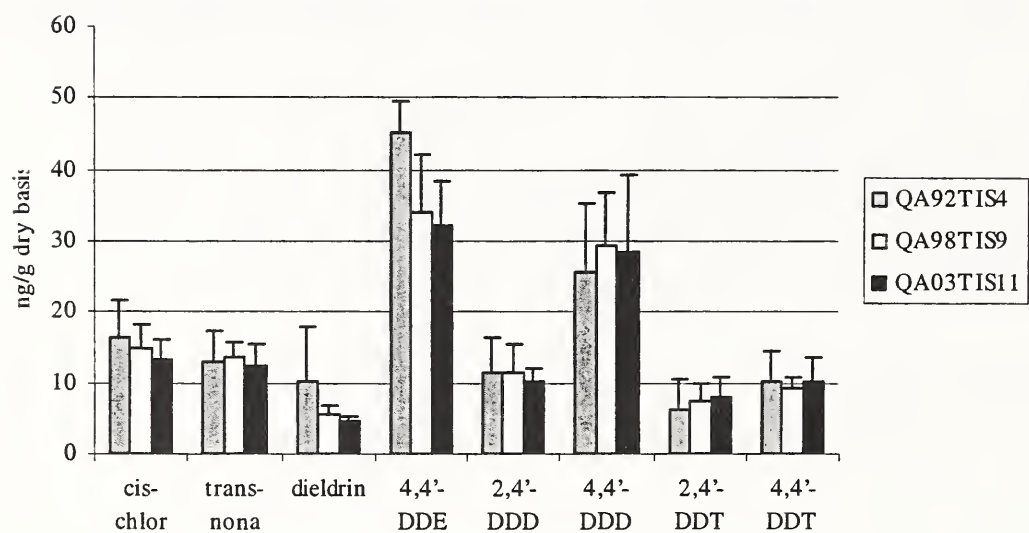
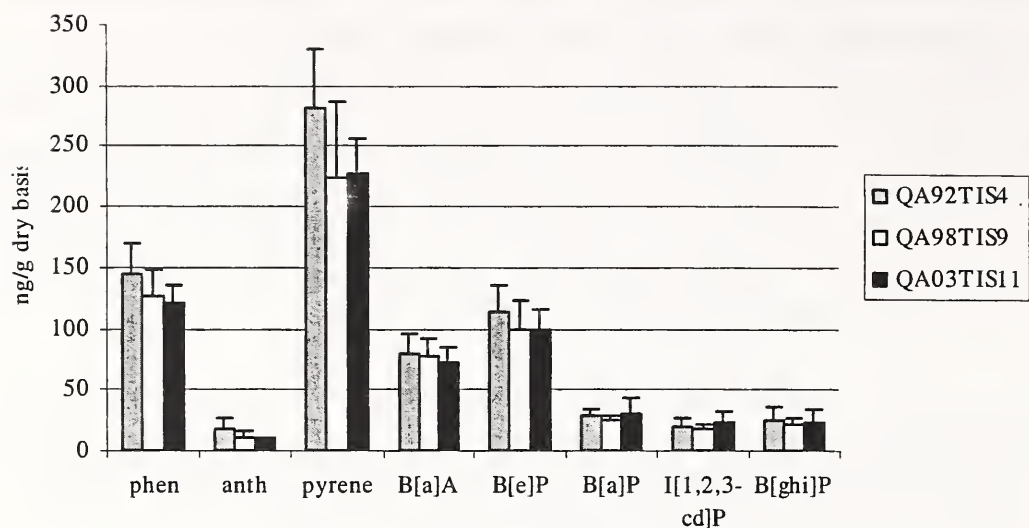
The concentrations of the PAHs of interest in Mussel Tissue XI range from < 1 ng/g wet-mass basis to 30 ng/g wet-mass basis, the concentrations of the pesticides of interest range from < 1 ng/g wet-mass basis to 3 ng/g wet-mass basis, and the concentrations of the PCB congeners range from < 1 ng/g wet-mass basis to 10 ng/g wet-mass basis. For the chlorinated pesticides, 13 of the 25 compounds were above the detection limits for the majority of the laboratories reporting, while 21 of the 25 PCB congeners were above the detection limits for the majority of the laboratories. There was good agreement among the laboratories for the percent water in Mussel Tissue XI, but poor agreement among the laboratories for the TEOs, ranging from 0.27 % to 7.49 %.

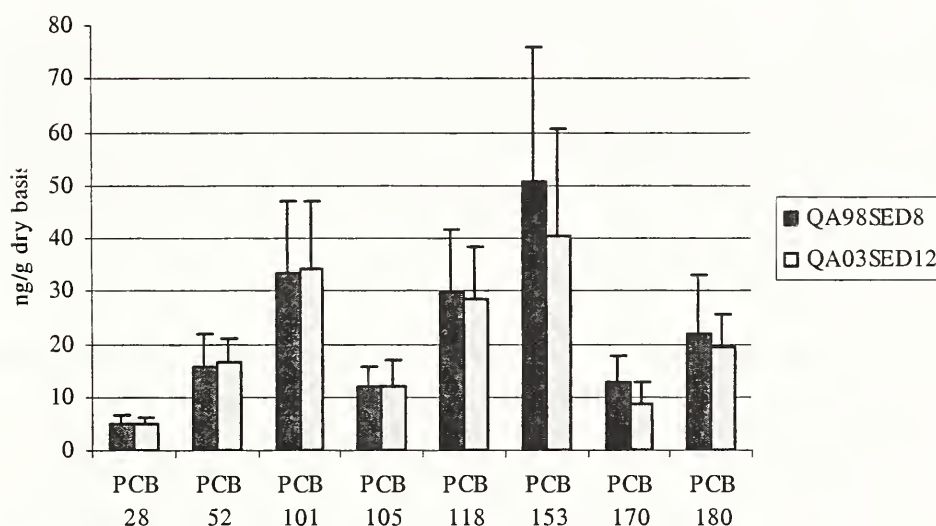
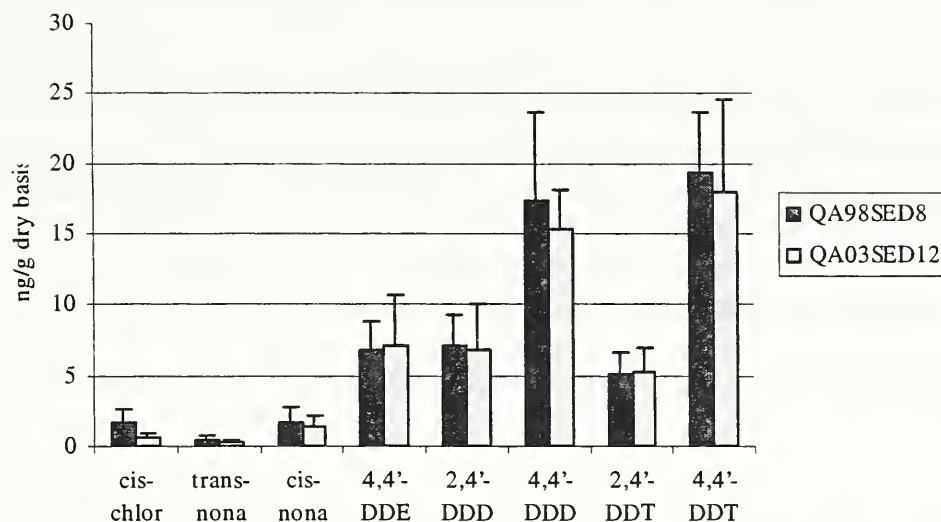
The concentrations of all of the analytes of interest were very similar between Mussel Tissue XI and SRM 1974b. Both materials were collected from Dorchester Bay, but the mussels used to prepare Mussel Tissue XI were collected in February 1992 while the mussels used to prepare SRM 1974b were collected in October 1999.

The z-scores for the PAHs, pesticides, and PCB congeners in Mussel Tissue XI based on 25 % of the exercise assigned value are summarized in Tables 14 to 16, respectively. The majority of the z-scores based on 25 % are within ± 2 (± 50 % of the exercise assigned value). The p-scores for the Mussel Tissue XI based on a 15 % relative standard deviation are summarized in Tables 20 to 22 for the PAHs, pesticides, and PCB congeners, respectively. It should be noted that the p-scores (15 %) for a number of laboratories are greater than 1. This means that the relative standard deviation for the three aliquots of Mussel Tissue XI from the one laboratory is greater than 15 %.

The PAH concentrations in Marine Sediment XII range from 20 ng/g dry-mass basis to 1100 ng/g dry-mass basis. The pesticide concentrations range from below the detection limits of the methods used to 20 ng/g dry-mass basis, while the PCB concentrations range from 1 ng/g dry-mass basis to 40 ng/g dry-mass basis. There was good agreement among the laboratories for percent water in the wet sediment. Only four laboratories returned data for the TOC with the values ranging from 1.82 % to 3.02 %.

As has been mentioned above, the mussel tissue used in this exercise was relabeled (QA03TIS11) after being used in two previous exercises (QA92TIS4 and QA98TIS9), and the dry sediment used to prepare Marine Sediment XII (QA03SED12) was also used to prepare the sediment used in the 1998 exercise (QA98SED8). The exercise assigned values for the three exercises in the case of the mussel tissue and for the two exercises in the case of the marine sediment are summarized in Tables 26, 27, and 28 for the PAHs, pesticides, and PCBs, respectively, and selected compounds are shown graphically below.





Overall, the agreement among the consensus means from the three exercises for the mussel tissue and the two exercises for the marine sediment is good (falling within one standard deviation of the exercise assigned value). There are some cases where improvements in the analytical methods used from 1992 to 2003 may explain the differences in the mussel tissue data. For example, the consensus mean data for 2,6-dimethylnaphthalene and 1,6,7-trimethylnaphthalene dropped 70 % and 34 %, respectively, from the 1992 to 1998 exercise and then were consistent between the 1998 and 2003 exercise. Both of these compounds can potentially coelute with other di- and trimethylnaphthalenes. Participants are now aware of these potential coelutions and have taken steps (i.e., longer columns, modified temperature programs) to separate the isomers. Similar examples for the pesticides include dieldrin and 4,4'-DDE which elute near one another and can sometimes switch retention order depending on column and temperature program. The PCB congener data are fairly consistent among the three exercises for the mussel tissue. This may be attributed to the discussions of elution order for the PCB congeners in the early meetings that were held for the intercomparison exercises. The marine sediment exercises do not show as much of a difference, probably

because the first use of this sediment was in 1998 after methods had been changed and refined.

The z-scores for the PAHs, pesticides, and PCB congeners based on 25 % of the exercise assigned value are summarized for Marine Sediment XII in Tables 17 to 19, respectively. In general, the z-scores based on 25 % were within ± 2 (± 50 % of the exercise assigned value) for Marine Sediment XII. The p-scores for the Marine Sediment XII based on a 15 % relative standard deviation are summarized in Tables 23 to 25 for the PAHs, pesticides, and PCB congeners, respectively. As for the Mussel Tissue XI, it should be noted that the p-scores (15 %) for a number of laboratories are greater than 1 (the relative standard deviation for the three aliquots of Marine Sediment XII from the one laboratory is greater than 15 %).

As in the past exercises, a variety of methods were used for extraction, extract cleanup, and analysis. These are summarized in Appendix E for the mussel tissue and Appendix F for the marine sediment. For the PAHs in the mussel tissue and marine sediment, laboratory 19 used gas chromatography with ion trap mass spectrometry (GC/ITMS) while the remainder of the participating laboratories in each exercise specified GC/MS. For the chlorinated analytes in the mussel tissue, laboratory 16 specified the use of high-resolution MS and 10 of the remaining laboratories used GC-ECD. Laboratory 16 also specified the use of high-resolution GC/MS for the chlorinated compounds in the marine sediment, and 11 of the remaining laboratories used GC-ECD. There was no obvious correlation between z-scores and method used.

For the 2003 exercises, the data provided in the various figures and tables of this report can be used for assessing the comparability of results of over 75 analytes of interest in this program and the performance of individual laboratories. The z-scores and the p-scores for the mussel tissue are summarized in Tables 14 to 16 and Tables 20 to 22, respectively, and the z-scores and the p-scores for the marine sediment are summarized in Tables 17 to 19 and Tables 23 to 25, respectively. For both materials, the highest percentage of z-scores and p-scores that were in the unsatisfactory category were for the chlorinated pesticides. In both of these materials, the chlorinated pesticides were typically present at lower concentrations than the concentrations of the PAHs and PCB congeners. In these exercises, interlaboratory variability is a greater contributor to measurement incomparability than intralaboratory variability. Laboratories reporting results of concurrent reference material analyses typically demonstrate better performance than those laboratories that do not analyze the reference materials.

Subgroups of the exercise participants have demonstrated comparability of results for many analytes within the 0 to 2 z-range based on use of 25 % of the exercise assigned concentration as the performance criterion. This implies that this subgroup can distinguish between two samples that have an analyte concentration difference of 100 %. The reported accuracy and reproducibility indices (z- and p-scores, respectively) can be easily converted to conform to the acceptability requirements of a particular program. For example, a z-score based on 25 % can be multiplied by two to convert to a z-score based on 12.5 % of the analyte concentration.

It is important to evaluate the non-quantitative results reported by each laboratory as well. Although these results are not easily presented or numerically evaluated, they are included in the various tables of this report that list the mean and individual results of the laboratories. The laboratory and its data users should closely examine these non-quantitative results. Decisions based on false negative or false positive results from a laboratory can lead to significant environmental and/or economic consequences. Some laboratories reported detection limits in these “real” matrix materials that may be too high for the data quality needs of their program(s), and these issues should be assessed as well.

Intercomparison exercises provide an important mechanism for assessing the comparability, accuracy, precision, and reproducibility of data being produced by the participating laboratories. Exercise materials similar in matrix, form, and analyte concentration to typical samples routinely analyzed by the laboratories are most useful for demonstrating the level of comparability and for revealing potential problem areas.

For the determination of the target compounds in these complex marine matrices with relatively low levels of these analytes, the levels of bias and reproducibility of many of the participating laboratories meet their current acceptability requirements; however, there is certainly room for improvement. Minimizing the among-laboratory biases so that the analytical variability is significantly less than the field sampling variability should be an achievable goal.

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Disclaimer

Certain commercial equipment, instruments, or materials are identified in this report to specify adequately the experimental procedure. Such identification does not imply recommendation or endorsement by the National Institute of Standards and Technology, nor does it imply that the materials or equipment identified are the best available for the purpose.

References

1. A. Y. Cantillo and R. M. Parris, “Evaluation of Trace Organic NOAA Status and Trends Quality Assurance Project Performance,” in *Quality Assurance for Analytical Laboratories*, M. Parkany (ed.), Royal Society of Chemistry, Spec. Publ. No. 130 (1993).

2. A. Y. Cantillo and R. M. Parris, National Status and Trends Program Quality Assurance Project: Trace Organic Intercomparison Exercise Results 1986-1990, NOAA Tech. Memo. NOS/ORCA 69, Silver Spring, MD (1994).
3. A. Y. Cantillo, NS&T Quality Assurance Project Intercomparison Exercise Results 1991-1993, NOAA Tech. Memo. NOS/ORCA 79, Silver Spring, MD (1995).
4. Schantz, M.M., Parris, R.M., and Wise, S.A., NIST/NOAA NS&T Intercomparison Exercise Program for Organic Contaminants in the Marine Environment: Description and Results of 1998 Organic Intercomparison Exercises, NOAA Tech Memo NOS ORCA 138, Silver Spring, MD (1998).
5. Certificate of Analysis for Standard Reference Material (SRM) 1974b, Organics in Mussel Tissue (*Mytilus edulis*), National Institute of Standards and Technology (NIST), Gaithersburg, MD, 2003.
https://srmors.nist.gov/view_detail.cfm?srm=1974B
6. Certificate of Analysis for Standard Reference Material (SRM) 1941b, Organics in Marine Sediment, National Institute of Standards and Technology (NIST), Gaithersburg, MD, 2002. https://srmors.nist.gov/view_detail.cfm?srm=1941B
7. IUPAC "The International Harmonized Protocol for the Proficiency Testing of (Chemical) Analytical Laboratories," Pure Appl. Chem. 65 (9), 2123-2144 (1993).

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Table 1: Analytes of Interest in NIST Intercomparison Exercise Program for Organic Contaminants in the Marine Environment

Chlorinated Pesticides

hexachlorobenzene	2,4'-DDE
alpha-HCH (alpha-BHC)	4,4'-DDE
beta-HCH (beta-BHC)	2,4'-DDD
gamma-HCH (gamma-BHC, lindane)	4,4'-DDD
heptachlor	2,4'-DDT
heptachlor epoxide	4,4'-DDT
cis-chlordane (alpha-chlordane)	chlorpyrifos
trans-chlordane (gamma-chlordane)	aldrin
oxychlordane	dieldrin
cis-nonachlor	endrin
trans-nonachlor	endosulfan I
mirex	endosulfan II
	endosulfan sulfate

Polychlorinated Biphenyl Congeners

<i>PCB No.</i>	<i>Compound Name</i>
8	2,4'-dichlorobiphenyl
18	2,2',5-trichlorobiphenyl
28	2,4,4'-trichlorobiphenyl
31	2,4',5-trichlorobiphenyl
44	2,2',3,5'-tetrachlorobiphenyl
49	2,2',4,5'-tetrachlorobiphenyl
52	2,2',5,5'-tetrachlorobiphenyl
66	2,3',4,4'-tetrachlorobiphenyl
95	2,2',3,5',6-pentachlorobiphenyl
99	2,2',4,4',5-pentachlorobiphenyl
101	2,2',4,5,5'-pentachlorobiphenyl
105	2,3,3',4,4'-pentachlorobiphenyl
118	2,3',4,4',5-pentachlorobiphenyl
128	2,2',3,3',4,4'-hexachlorobiphenyl
138	2,2',3,4,4',5'-hexachlorobiphenyl
149	2,2',3,4',5',6-hexachlorobiphenyl
153	2,2',4,4',5,5'-hexachlorobiphenyl
156	2,3,3',4,4',5-hexachlorobiphenyl
170	2,2',3,3',4,4',5-heptachlorobiphenyl
180	2,2',3,4,4',5,5'-heptachlorobiphenyl
187	2,2',3,4',5,5',6-heptachlorobiphenyl
194	2,2',3,3',4,4',5,5'-octachlorobiphenyl
195	2,2',3,3',4,4',5,6-octachlorobiphenyl
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl
209	decachlorobiphenyl

Table 1. (continued)

Polycyclic aromatic hydrocarbons (PAH)

naphthalene	pyrene
2-methylnaphthalene	benz[<i>a</i>]anthracene
1-methylnaphthalene	chrysene
biphenyl	triphenylene
2,6-dimethylnaphthalene	benzo[<i>b</i>]fluoranthene
acenaphthylene	benzo[<i>j</i>]fluoranthene
acenaphthene	benzo[<i>k</i>]fluoranthene
1,6,7-trimethylnaphthalene	benzo[<i>e</i>]pyrene
fluorene	benzo[<i>a</i>]pyrene
phenanthrene	perylene
anthracene	indeno[1,2,3- <i>cd</i>]pyrene
1-methylphenanthrene	dibenz[<i>a,h</i>]anthracene
fluoranthene	benzo[<i>ghi</i>]perylene

Table 2. Mussel TissueXI (QA03TISI11): Laboratory means of three replicates and exercise assigned values - Water, TEO, and PAHs
(reported to three significant figures)

Laboratory means of three significant figures)																					
Laboratory No.	1a	1b	1c	2	4	7	8	9	9 rev*	11	12	14	15	16	17	18	19	20	Exercise Assigned		
	Value								s	%RSD									s	%RSD	
Water (percent)	91.6	NA	90.1	NA	NA	91.1	91.9	91.2	91.2	92.0	89.7	91.7	91.6	91.9	84.9	92.4	91.1	93.1	91.5	0.8	0.9
TTEO (percent)	0.617	NA	0.610	0.270	0.367	0.623	0.400	NA	NA	7.49	0.267	0.699	0.288	0.332	NA	0.424	0.563	5.12	not calculated		

PAHs (ng/g wet mass)																						
Laboratory No.	1a	1b	1c	2	4	7	8	9	9 rev*	11	12	14	15	16	17	18	19	20	Exercise Assigned			
	Value								s	%RSD									s	%RSD		
naphthalene	1.94	3.80	2.20	<4.0	NA	2.31	1.41	78.5	6.85	16.9	2.49	NA	1.25	NA	1.21	5.48	<6.55	NA	2.19	0.85	38.8	
2-methylnaphthalene	3.17	3.18	5.30	<4.0	NA	2.99	1.68	35.5	3.10	34.0	1.76	NA	1.64	NA	1.82	4.27	<3.59	3.19	2.27	0.78	34.5	
1-methylnaphthalene	2.06	1.90	3.35	<4.0	NA	<2.0	1.01	21.1	1.84	23.9	1.14	34.2	0.903	NA	1.28	2.97	<2.61	1.79	1.65	0.86	52.2	
biphenyl	1.00	1.22	1.49	<4.0	NA	<2.0	<1.0	13.1	1.15	11.9	NA	NA	1.03	NA	0.557	2.27	<4.11	NA	1.06	0.34	32.3	
2,6-dimethylnaphthalene	2.87	2.11	3.11	<4.0	NA	3.23	3.48	35.6	3.11	47.8	1.85	NA	2.83	NA	2.87	4.70	2.585	2.30	2.77	0.52	18.8	
acenaphthylene	0.545	<0.1	0.476	<4.0	NA	<2.0	<1.3	8.10	0.705	21.4	1.04	NA	0.471	NA	0.550	1.49	<1.10	0.879	0.584	0.169	28.9	
acenaphthene	0.741	<0.3	1.79	<4.0	NA	<2.0	<1.3	7.42	0.640	15.9	1.14	NA	0.675	NA	0.647	1.40	<4.21	0.920	1.05	0.52	49.2	
1,6,7-trimethylnaphthalene	2.74	NA	4.02	<4.0	NA	<2.0	NA	NA	NA	48.8	1.53	NA	2.85	NA	2.28	4.80	3.84	1.75	2.50	0.84	33.6	
fluorene	1.75	1.49	3.26	<4.0	NA	<2.0	2.67	<57.0	<4.96	30.7	NA	1.91	1.60	NA	1.16	3.62	<1.82	1.53	2.26	0.93	41.1	
phenanthrene	10.8	11.6	12.5	8.42	NA	9.50	32.1	157	13.7	123	9.90	10.2	11.8	NA	8.11	11.8	12.1	11.1	10.8	1.4	12.6	
anthracene	0.923	<2	1.67	<4.0	NA	<2.0	<0.7	17.3	1.51	25.1	NA	1.01	0.954	NA	0.827	1.57	<2.26	NA	0.939	0.022	2.3	
1-methylphenanthrene	5.11	NA	5.49	4.06	NA	3.75	5.42	40.0	3.50	57.8	NA	NA	5.24	NA	3.01	3.59	4.10	4.43	4.42	0.86	19.4	
fluoranthene	27.6	29.3	33.4	23.3	NA	24.6	31.8	252	22.0	331	23.3	41.7	31.9	NA	21.0	28.1	30.3	28.9	28.2	3.9	13.7	
pyrene	21.8	20.4	23.9	18.0	NA	18.8	23.9	191	16.7	264	18.1	21.5	24.4	NA	16.4	17.0	20.9	20.4	20.4	2.7	13.1	
benz[a]anthracene	5.51	6.41	8.70	4.67	NA	7.08	7.06	72.7	6.34	91.2	5.78	NA	9.88	NA	4.83	9.24	7.54	6.54	6.41	1.25	19.6	
chrysene	10.8	11.1	NA	NA	NA	16.2	20.8	173	15.2	205	NA	NA	NA	NA	14.5	NA	NA	NA	12.8	2.4	18.8	
triphenylene	6.26	6.24	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.25	ND	ND	
benzo[b]fluoranthene	6.90	7.50	5.83	NA	NA	6.98	9.07	106	9.25	122	NA	NA	8.24	NA	5.42	8.72	7.19	NA	7.32	1.23	16.8	
benzo[j]fluoranthene	3.05	3.06	2.51	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.89	NA	NA	NA	3.38	1.04	30.8	
benzo[k]fluoranthene	3.32	3.46	2.97	<4.0	NA	2.28	6.07	28.1	2.47	27.5	3.60	5.67	NA	NA	NA	NA	NA	2.28	3.43	1.28	37.5	
benzo[e]pyrene	8.29	9.42	7.88	7.77	NA	6.31	11.4	85.0	7.43	95.0	8.41	3.09	10.3	NA	7.56	8.99	9.65	10.7	8.89	1.48	16.6	
benzo[a]pyrene	1.98	2.27	10.3	<4.0	NA	<2.0	2.88	<57.0	<4.96	34.5	4.28	NA	2.89	NA	1.56	4.36	<6.31	1.86	2.76	1.07	38.7	
perylene	0.683	1.09	NA	<4.0	NA	<2.0	1.01	<57.0	<4.96	10.4	0.808	NA	1.03	NA	0.543	1.35	<3.67	0.796	0.914	0.257	28.1	
indeno[1,2,3-cd]pyrene	1.37	2.34	1.51	<4.0	NA	<2.0	2.31	16.2	1.41	18.5	2.09	NA	2.30	NA	1.16	3.90	<6.13	1.37	2.04	0.84	41.2	
dibenz[a,h]anthracene	0.475	0.554	0.232	<4.0	NA	<2.0	<1.3	<57.0	<4.96	4.37	1.58	NA	NA	NA	0.263	NA	<1.06	0.376	0.380	0.137	36.0	
benzo[ghi]perylene	1.50	2.68	2.06	<4.0	NA	<2.0	2.08	17.1	1.49	22.5	0.793	NA	2.60	NA	1.29	3.79	<3.95	1.51	2.19	0.82	37.6	
chrysene/triphenylene			20.8	13.9							15.0		22.8				19.0	19.5	17.5	16.3	2.8	17.1
benzo[b+g]fluoranthene				6.79														8.90	7.85	ND	ND	
benzo[k]fluoranthene										9.79									9.79	ND	ND	
benzo[j+k]fluoranthene													6.96				7.03	6.11	6.70	ND	ND	
dibenz[a,h+a,c]anthracene													0.540				1.33		0.935	ND	ND	

Note: Bolded values were not used in the calculation of the exercise assigned value.

*Lab 9 rev values are calculated on a wet mass basis as requested. The original submission (Lab 9) was calculated on a dry mass basis.

Table 3. Mussel Tissue XI (QA03TIS11): Laboratory means of three replicates and exercise assigned values - Pesticides
(reported to three significant figures)

Laboratory No.	ng/g wet mass																			Exercise Assigned		
	1a	1b	1c	2	4	7	8	9	9 rev*	11	12	14	15	16	17	18	19	20	Value	s	%RSD	95% CI
alpha-HCH (a-BHC)	<0.2	NA	<0.3	NA	<1	<0.5	<0.5	<2.85	<0.496	0.433	NA	0.252	<0.424	0.116	DL	<0.423	NA	<0.1	<1			
hexachlorobenzene	<0.2	<0.4	<0.3	NA	<1	<0.5	<0.4	<2.85	<0.496	0.877	DL	NA	<0.424	0.136	0.0533	<0.423	<0.062	0.0392	<1			
gamma-HCH (g-BHC),lindane	<0.2	NA	<0.3	NA	<1	<0.5	<0.4	<2.85	<0.496	0.113	DL	0.198	<0.425	0.0547	0.0667	<0.423	0.501	0.0430	<1			
beta-HCH (b-BHC)	<0.2	NA	<0.3	NA	<1	<0.5	NA	<2.85	<0.496	0.320	NA	0.044	<1.15	<0.019	0.0300	<0.423	NA	0.0543	<1			
heptachlor	<0.2	NA	0.566	NA	<1	<0.5	<0.3	<2.85	<0.496	2.24	DL	0.246	<0.426	0.114	DL	<0.423	0.125	<0.11	0.263	0.211	80.2	0.335
aldrin	<0.2	NA	<0.3	NA	<1	<0.5	<0.5	<2.85	<0.496	2.60	NA	0.112	1.56	0.0685	DL	<0.423	<0.012	<0.1	<1			
heptachlor epoxide	<0.2	NA	<0.3	NA	<1	<0.5	<0.4	<2.85	<0.496	ND	DL	NA	<0.426	0.0653	DL	<0.423	0.285	<0.1	<1			
oxychlorodane	<0.2	NA	0.370	NA	<1	<0.5	NA	<2.85	<0.496	3.77	NA	NA	<1.14	<0.089	DL	17.3	NA	0.290	0.330	ND	ND	ND
gamma-chlordane	0.918	1.60	1.06	NA	1.14	1.03	0.852	17.0	1.71	15.6	NA	2.53	1.09	1.37	1.17	0.799	NA	0.683	1.19	0.52	43.3	0.33
2,4'-DDE	<0.2	<0.4	0.211	NA	NA	<1.0	NA	<2.85	<0.496	2.29	DL	1.42	<0.439	<0.105	DL	<0.423	NA	0.241	0.226	ND	ND	ND
endosulfan I	<0.2	NA	<0.3	NA	NA	<1.0	<0.4	<2.85	<0.496	ND	NA	0.164	<1.14	<0.207	DL	29.4	<0.1	<0.1	<2			
cis-chlordane (alpha-chlordane)	1.23	1.57	1.37	NA	1.12	0.970	1.65	11.2	0.982	15.2	1.37	0.872	1.22	1.19	1.28	0.897	2.62	0.778	1.19	0.26	22.2	0.15
trans-nonachlor	1.15	1.47	1.06	NA	0.758	0.845	1.10	9.85	0.863	14.7	1.08	1.28	1.08	1.68	1.22	0.749	1.29	0.713	1.13	0.28	25.1	0.17
dieldrin	0.448	NA	0.453	NA	<1	<0.5	0.421	5.33	0.466	8.92	NA	NA	<1.12	0.269	DL	<0.423	NA	0.344	0.417	0.050	12.1	0.062
4,4'-DDE	2.97	3.23	3.49	NA	2.79	2.20	3.10	51.6	4.52	39.7	3.18	1.70	3.72	2.87	3.26	2.66	3.19	2.10	2.89	0.56	19.4	0.32
2,4'-DDD	0.902	1.18	0.723	NA	<1	1.17	0.829	<2.85	<0.496	13.6	0.967	0.313	0.831	0.611	0.873	0.966	0.968	1.11	0.928	0.172	18.6	0.109
endrin	<0.2	NA	<0.3	NA	<1	<0.5	<0.5	<2.85	<0.496	1.76	NA	0.335	NA	<0.209	DL	<4.23	NA	<0.09	<1			
endosulfan II	<0.2	NA	<0.3	NA	NA	<2.0	<0.7	<2.85	<0.496	20.5	NA	NA	<3.70	<0.434	DL	<4.23	<0.1	<0.1	<15			
4,4'-DDD	2.45	3.65	2.41	NA	1.26	2.02	2.34	30.1	2.64	30.6	NA	1.60	5.04	1.78	2.93	2.15	3.40	1.88	2.54	0.98	38.4	0.62
2,4'-DDT	0.531	<0.5	0.937	NA	<1	<1.0	<0.7	<2.85	<0.496	8.92	NA	1.72	<0.422	<0.162	DL	<4.23	0.959	0.462	0.722	0.262	36.3	0.417
cis-nonachlor	0.437	0.707	0.321	NA	<1	<0.5	NA	8.27	0.723	8.93	NA	0.659	0.457	0.176	DL	0.282	NA	0.442	0.435	0.181	41.5	0.139
4,4'-DDT	0.806	1.24	6.22	NA	<1	<1.0	other	10.6	0.932	9.78	DL	1.81	1.20	0.625	1.18	<4.23	0.846	0.434	0.903	0.312	34.6	0.261
mirex	<0.2	NA	<0.3	NA	<1	<1.5	<0.5	<2.85	<0.496	0.917	DL	NA	<0.429	0.0700	DL	<0.423	<0.157	0.0395	<1			
endosulfan sulfate	<0.2	NA	<0.3	NA	NA	<2.0	NA	<2.85	<0.496	NA	NA	NA	<1.14	0.0403	DL	<4.23	<0.1	<0.11	<3			
chlorpyrifos	<0.2	NA	NA	NA	NA	<1.0	NA	NA	NA	3.16	NA	NA	NA	NA	DL	<0.423	NA	<0.1	<1			

Note: Bolded values were not used in the calculation of the exercise assigned value.

*Lab 9 rev values are calculated on a wet mass basis as requested. The original submission (Lab 9) was calculated on a dry mass basis.

Table 4. Mussel Tissue XI (QA03TIS11): Laboratory means of three replicates and exercise assigned values - PCBs
(reported to three significant figures)

ng/g wet mass	Laboratory No.																Exercise Assigned					
	1a	1b	1c	2	4	7	8	9	9 rev*	11	12	14	15	16	17	18	19	20	Value	s	%RSD	95% CI
PCB 8	0.267	0.299	0.323	<2.1	NA	0.255	<0.7	3.37	0.296	29.1	NA	NA	NA	0.303	1.03	<0.133	0.550	0.4636	0.437	0.262	60.0	0.202
PCB 18	0.905	0.970	1.02	<0.89	NA	0.530	0.709	8.41	0.737	13.0	0.714	0.553	1.06	0.593	1.03	0.780	0.768	0.7091	0.796	0.186	23.3	0.112
PCB 28	3.19	3.08	3.63	2.37	NA	2.78	3.12	29.7	2.60	44.3	NA	NA	2.59	3.67	3.19	6.00	2.80	2.6401	3.00	0.42	13.8	0.28
PCB 31	2.92	2.37	2.92	1.72	NA	2.62	NA	15.3	1.34	17.5	NA	NA	4.49	2.48	NA	NA	NA	2.61	2.52	0.41	16.2	0.38
PCB 44	3.36	3.50	3.75	2.88	NA	3.38	3.22	33.9	2.96	41.8	3.37	2.51	3.48	5.14	3.60	3.47	3.40	2.81	3.41	1.96	57.5	1.2
PCB 49	5.41	4.36	5.97	3.59	NA	3.56	NA	18.8	1.65	64.5	4.01	2.90	4.11	3.25	4.18	3.39	NA	3.84	4.04	0.92	22.9	0.62
PCB 52	4.90	5.40	5.90	4.00	NA	4.64	4.64	35.5	3.12	69.9	4.61	3.06	5.40	4.60	5.30	4.70	5.31	4.09	4.71	0.73	15.5	0.44
PCB 66	4.01	5.35	5.76	3.44	NA	5.01	5.72	65.7	5.76	61.8	5.937	5.94	6.11	6.40	5.52	4.58	5.36	3.99	5.35	0.80	14.9	0.54
PCB 95	2.91	4.80	4.25	5.13	NA	4.58	NA	39.1	3.42	62.6	2.626	2.63	4.58	4.43	NA	4.16	NA	3.35	4.24	0.70	16.5	0.54
PCB 99	4.72	4.16	6.17	3.27	NA	4.11	NA	27.0	2.37	63.7	4.14	2.33	4.59	4.84	NA	3.79	NA	3.86	4.36	0.79	18.1	0.56
PCB 101	8.39	7.95	9.78	6.76	NA	7.83	6.78	70.6	6.19	109	7.30	3.99	8.53	7.83	8.16	8.57	8.49	6.93	7.95	0.86	10.8	0.52
PCB 105	3.34	2.98	3.05	<2.7	NA	2.96	3.12	30.3	2.65	41.5	NA	NA	3.54	3.19	3.21	2.91	2.89	1.84	3.00	0.43	14.4	0.29
PCB 118	8.33	6.87	6.44	6.86	NA	7.53	6.71	67.1	5.88	104	4.086	4.09	7.94	8.13	7.40	7.70	7.89	6.78	7.13	1.10	15.4	0.70
PCB 128	1.38	1.27	1.19	1.19	NA	1.26	1.20	14.1	1.24	17.5	0.769	0.769	1.33	1.15	1.24	1.20	1.55	0.8466	1.17	0.23	19.4	0.14
PCB 138	8.45	6.70	4.42	5.83	NA	8.79	7.14	69.8	6.11	109	NA	NA	9.80	8.35	8.20	7.52	10.0	6.77	7.62	1.69	22.1	1.13
PCB 149	5.04	5.00	5.49	4.82	NA	5.08	NA	39.5	3.46	67.3	3.562	3.56	5.34	5.41	NA	4.09	NA	2.96	4.74	0.73	15.5	0.56
PCB 153	9.52	10.2	9.57	6.73	NA	8.20	9.20	63.6	5.58	143	NA	NA	11.5	8.23	10.7	7.34	8.56	9.85	9.14	1.39	15.2	0.88
PCB 156	0.482	0.475	0.469	0.694	NA	0.424	NA	10.0	0.876	17.1	6.06	NA	0.564	0.574	NA	0.433	NA	0.573	0.521	0.087	16.7	0.067
PCB 170	0.164	0.112	<0.3	<0.78	NA	<0.2	<0.5	1.68	0.148	5.56	NA	NA	<0.426	0.110	0.223	<0.133	0.2023	0.3255	0.178	0.101	57.0	0.161
PCB 180	0.915	0.715	0.738	<0.62	NA	0.673	0.536	7.14	0.623	35.1	0.562	0.914	0.718	0.745	0.797	0.871	0.744	0.460	0.716	0.144	20.1	0.103
PCB 187	2.19	2.153	2.01	1.81	NA	2.16	2.33	20.9	1.83	29.8	NA	NA	2.17	2.10	2.25	1.84	1.82	1.76	2.05	0.19	9.5	0.12
PCB 194	<0.2	<0.2	<0.3	<0.43	NA	<0.2	NA	0.410	<0.496	0.573	DL	0.131	<0.431	0.0327	NA	<0.133	NA	0.0234	<1			
PCB 195	<0.2	<0.2	<0.3	<0.33	NA	<0.2	<0.5	<2.85	<0.496	0.723	NA	NA	<0.432	0.0100	DL	<0.133	<0.12	<0.11	<1			
PCB 206	<0.2	<0.1	<0.3	<0.37	NA	<0.2	<0.5	<2.85	<0.496	0.433	DL	0.0920	<0.428	0.0130	DL	<0.133	<0.098	0.0449	<1			
PCB 209	<0.2	<0.1	<0.3	<0.36	NA	<0.2	<0.5	<2.85	<0.496	0.963	DL	0.0277	<0.427	0.0140	DL	<0.133	<0.1	<0.1	<1			

Note: Bolded values were not used in the calculation of the exercise assigned value.

*Lab 9 rev values are calculated on a wet mass basis as requested. The original submission (Lab 9) was calculated on a dry mass basis.

Table 5. SRM 1974b: Laboratory mean three replicates and target values - water, TEO, and PAHs

	Certificate Values																	
	1a	1b	1c	2	4	7	8	9	9 rev*	11	12	14	15	16	17	18	19	20
Water (percent)	89.9	NA	89.6	NA	NA	89.6	90.3	89.6	89.6	NA	90.9	1.40	90.0	90.2	NA	91.1	89.6	NA
TEO (percent)	0.630	NA	0.431	NA	0.440	0.720	0.450	NA	NA	10.6	NA	1.29	0.351	0.430	NA	0.670	0.610	0.505

ng/g wet basis (reported to three significant figures)

Laboratory No.	Certificate Values																	
	1a	1b	1c	2	4	7	8	9	9 rev*	11	12	14	15	16	17	18	19	20
naphthalene	2.43	4.46	2.15	<4.0	NA	<2.0	<1.3	70.7	7.28	15.0	2.53	NA	1.43	NA	1.30	5.27	<6.55	NA
2-methylnaphthalene	1.21	2.16	2.12	<4.0	NA	<2.0	<1.0	26.7	2.76	7.92	1.07	NA	1.01	NA	0.710	4.25	<3.59	1.50
1-methylnaphthalene	0.624	1.23	0.871	<4.0	NA	<2.0	<1.0	<71.2	<7.22	4.95	0.600	36.5	0.443	NA	0.416	2.64	<2.61	0.800
biphenyl	0.673	0.760	0.739	<4.0	NA	<2.0	<1.0	<71.2	<7.22	3.32	<71.2	NA	0.457	NA	0.174	2.70	<4.11	NA
2,6-dimethylnaphthalene	0.306	<0.6	<0.5	<4.0	NA	<2.0	<1.3	<71.2	<7.22	3.47	0.579	NA	0.473	NA	0.325	3.05	<2.44	1.10
acenaphthylene	0.543	0.430	0.307	<4.0	NA	<2.0	<1.3	<71.2	<7.22	6.60	1.14	NA	0.198	NA	0.678	2.64	<1.10	0.950
acenaphthene	2.89	0.360	0.725	<4.0	NA	<2.0	<1.3	<71.2	<7.22	4.94	0.554	NA	0.365	NA	0.422	2.02	<4.21	0.650
1,6,7-trimethylnaphthalene	0.422	NA	0.799	<4.0	NA	<2.0	NA	NA	<7.22	4.67	DL	NA	0.390	NA	0.351	4.62	<1.22	0.500
fluorene	0.481	0.560	1.20	<4.0	NA	<2.0	<1.3	<71.2	<7.22	6.04	<71.2	0.970	0.466	NA	0.475	3.93	<1.82	0.700
phenanthrene	2.68	2.51	3.08	10.6	NA	2.54	5.43	31.9	3.32	21.3	2.62	3.31	2.65	NA	1.82	4.35	3.01	2.70
anthracene	0.538	0.540	0.896	<5.9	NA	<2.0	1.73	15.8	1.64	15.6	15.80	2.03	0.551	NA	0.889	1.44	<2.26	NA
1-methylphenanthrene	1.04	NA	0.941	<5.9	NA	<2.0	<1.3	<71.2	<7.22	9.59	<71.2	NA	0.822	NA	0.902	0.920	<2.42	1.00
fluoranthene	17.3	17.8	20.9	24.5	NA	16.2	18.6	120	12.5	169	15.6	27.2	19.6	NA	14.7	17.6	19.1	20.6
pyrene	18.0	17.7	21.2	22.6	NA	19.7	19.1	132	13.7	176	17.0	20.8	20.2	NA	15.1	15.9	20.0	21.2
benz[a]anthracene	4.74	4.55	6.04	5.50	NA	4.25	4.62	48.7	5.05	56.5	4.51	NA	7.09	NA	2.59	7.05	5.27	5.15
chrysene	6.58	5.61	NA	NA	NA	10.2	11.7	87.8	9.11	98.3	87.77	NA	NA	NA	8.06	NA	NA	NA
triphenylene	4.56	5.01	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
benzo[b]fluoranthene	6.86	6.48	5.72	NA	NA	6.38	7.34	80.1	8.31	79.5	80.07	0.855	7.19	NA	3.64	7.09	5.65	NA
benzo[j]fluoranthene	3.07	2.73	2.44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.32	NA	NA	NA
benzo[k]fluoranthene	3.16	3.09	3.08	<4.0	NA	2.31	4.86	22.7	2.35	24.0	3.48	14.3	NA	NA	NA	NA	NA	3.10
benzo[e]pyrene	10.4	9.79	9.07	10.2	NA	7.00	10.9	61.6	6.42	85.0	10.4	4.86	10.9	NA	7.53	8.83	10.0	11.3
benzo[a]pyrene	2.88	2.96	13.4	<5.9	NA	<2.0	2.90	79.2	8.23	31.4	4.68	7.03	2.81	NA	1.38	3.30	<6.31	2.30
perylene	1.04	1.11	NA	<5.9	NA	<2.0	<1.0	<71.2	<7.22	9.45	1.04	NA	1.15	NA	0.663	1.01	<3.67	1.00
indeno[1,2,3-cd]pyrene	2.13	2.36	2.17	<5.9	NA	<2.0	2.58	18.4	1.90	21.3	2.58	NA	2.68	NA	1.10	2.84	<6.13	1.85
dibenz[a,h]anthracene	0.333	0.490	0.356	<5.9	NA	<2.0	<1.3	<71.2	<7.22	4.31	1.45	NA	NA	NA	0.289	NA	<1.06	0.400
benzo[ghi]perylene	3.29	2.95	3.37	<5.9	NA	<2.0	2.91	22.6	2.35	29.7	1.16	NA	3.80	NA	1.83	3.42	<3.95	2.50
chrysene/triphenylene			13.9	12.6							9.76		13.9			11.8	11.9	7.60
benzo[b+j]fluoranthene				8.13							9.51							7.80
benzo[b+a]fluoranthene																		
benzo[j+k]fluoranthene													5.79			5.58	6.40	
dibenz[a,h+a,c]anthracene													0.660			1.17		

*Lab 9 rev values are calculated on a wet mass basis as requested. The original submission (Lab 9) was calculated on a dry mass basis.

Table 6. SRM 1974b: Laboratory mean three replicates and target values - pesticides
ng/g wet basis (reported to three significant figures)

Laboratory No.	1a	1b	1c	2	4	7	8	9	9 rev*	11	12	14	15	16	17	18	19	20	Certificate Values	
																			conc	95%CI type
alpha-HCH (a-BHC)	<0.2	NA	<0.3	NA	<1	<0.5	<0.5	<3.5	<0.722	0.320	NA	0.232	<0.434	0.0763	NA	<0.423	NA	<0.1	no target	Target
hexachlorobenzene	<0.2	<0.4	<0.3	NA	<1	<0.5	<0.4	<3.5	<0.722	0.220	DL	NA	<0.424	0.0983	NA	<0.423	<0.062	0.0358	no target	Target
gamma-HCH (g-BHC, lindane)	<0.2	NA	<0.3	NA	<1	<0.5	<0.4	<3.5	<0.722	0.173	DL	0.191	<0.425	0.0475	NA	<0.423	0.890	0.0257	no target	Target
beta-HCH (b-BHC)	<0.2	NA	<0.3	NA	<1	<0.5	NA	<3.5	<0.722	0.177	NA	NA	<1.15	<0.020	NA	<0.423	NA	0.0310	no target	Target
heptachlor	<0.2	NA	0.447	NA	<1	<0.5	<0.3	<3.5	<0.722	0.773	DL	0.285	<0.426	0.0627	NA	<0.423	0.108	0.0262	0.212	0.084 Reference
aldrin	<0.2	NA	<0.3	NA	<1	<0.5	<0.5	<3.5	<0.722	0.263	NA	0.0710	0.964	0.0593	NA	<0.423	<0.012	<0.1	no target	Target
heptachlor epoxide	<0.4	NA	<0.3	NA	<1	<0.5	<0.4	<3.5	<0.722	ND	DL	NA	<0.426	0.0487	NA	<0.423	0.294	<0.1	no target	Target
oxychlorane	<0.4	<0.4	0.372	NA	<1	<0.5	NA	<3.5	<0.722	4.03	NA	NA	<1.15	<0.044	NA	2.11	NA	0.361	0.362	0.072 Reference
gamma-chlordane	1.04	1.59	1.09	NA	1.25	0.927	0.654	16.9	1.76	11.4	NA	1.56	0.984	1.09	NA	0.750	NA	0.776	1.14	0.17 Certified
2,4'-DDE	<0.4	<0.7	0.234	NA	NA	<1.0	NA	<3.5	<0.722	0.947	DL	1.68	<0.439	<0.118	NA	0.181	NA	0.258	0.336	0.044 Certified
endosulfan I	<0.4	NA	<0.3	NA	NA	<1.0	<0.4	<3.5	<0.722	ND	NA	0.350	<1.14	<0.103	NA	41.8	<0.1	<0.1	no target	Target
cis-chlordane (alpha-chlordane)	1.32	1.52	1.78	NA	0.938	1.03	1.48	10.1	1.04	12.4	1.36	0.898	1.12	1.02	2.16	1.12	2.97	1.02	1.36	0.10 Certified
trans-nonachlor	1.32	1.53	1.25	NA	0.538	0.798	1.12	10.7	1.12	12.8	1.17	1.59	1.07	1.49	2.19	0.800	1.22	0.946	1.30	0.14 Certified
dieldrin	0.595	NA	0.593	NA	0.324	<0.5	0.470	6.25	0.649	8.32	NA	NA	<1.12	0.185	NA	16.7	NA	0.444	0.62	0.13 Reference
4,4'-DDE	4.36	3.96	3.96	NA	3.47	2.55	4.09	56.1	5.83	41.6	3.92	2.19	4.27	3.63	5.71	2.95	3.76	3.32	4.15	0.38 Certified
2,4'-DDD	1.02	1.34	0.972	NA	0.801	1.39	0.721	<3.5	<0.722	12.6	1.11	0.490	0.870	0.745	NA	0.951	1.16	1.35	1.09	0.16 Reference
endrin	<0.4	NA	<0.3	NA	<1	<0.5	<0.5	<3.5	<0.722	3.47	NA	0.375	NA	<0.112	NA	<4.23	NA	<0.09	no target	Target
endosulfan II	<0.4	NA	<0.3	NA	NA	<2.0	<0.7	<3.5	<0.722	20.3	NA	NA	<3.70	<0.577	NA	<4.23	<0.1	<0.1	no target	Target
4,4'-DDD	3.29	<0.6	3.23	NA	1.61	2.34	2.33	27.5	2.87	31.5	NA	1.90	5.07	2.27	4.80	2.25	3.26	2.69	3.34	0.22 Certified
2,4'-DDT	0.894	3.91	1.01	NA	1.17	<1.0	<0.7	<3.5	<0.722	6.14	NA	1.98	<0.422	<1.42	NA	<4.23	1.02	0.629	0.894	0.057 Reference
cis-nonachlor	0.605	0.840	0.429	NA	<1	<0.5	NA	5.79	0.600	9.20	NA	0.893	0.510	0.222	NA	0.349	NA	0.594	0.64	0.16 Reference
4,4'-DDT	0.406	<0.5	4.41	NA	0.258	<1.0	NA	3.36	0.351	2.24	DL	2.09	0.465	<0.255	0.343	<4.23	0.359	0.251	0.396	0.096 Reference
mirex	<0.3	NA	<0.3	NA	<1	<1.5	<0.5	<3.5	<0.722	0.793	DL	NA	<0.429	0.0797	NA	<0.423	<0.157	0.0361	no target	Target
endosulfan sulfate	<0.3	NA	<0.3	NA	NA	<2.0	NA	<3.5	<0.722	ND	NA	NA	<1.14	0.0370	NA	<4.23	<0.1	<0.11	no target	Target
chlorpyrifos	<0.3	NA	NA	NA	NA	<1.0	NA	NA	NA	0.950	NA	NA	NA	NA	NA	<0.423	NA	<0.1	no target	Target

*Lab 9 rev values are calculated on a wet mass basis as requested. The original submission (Lab 9) was calculated on a dry mass basis.

Table 7. SRM 1974b: Laboratory mean three replicates and target values - PCBs
ng/g wet basis (reported to three significant figures)

Laboratory No.		ng/g wet basis (reported to three significant figures)																	Certificate Values		
		1a	1b	1c	2	4	7	8	9	9 rev*	11	12	14	15	16	17	18	19	20	conc	95%CL type
PCB 8		0.352	0.390	0.365	<2.9	NA	0.235	<0.7	4.11	0.426	8.57	NA	NA	NA	0.323	NA	<0.134	0.410	0.388	0.37	0.11 Reference
PCB 18		0.868	1.00	1.02	<1.3	NA	0.446	0.716	9.55	0.988	11.7	0.897	0.638	1.07	0.586	NA	0.933	0.853	0.796	0.84	0.13 Certified
PCB 28		3.44	3.23	3.82	1.99	NA	2.82	3.40	27.2	2.83	41.5	NA	NA	2.55	4.14	NA	8.34	3.31	3.03	3.43	0.25 Certified
PCB 31		2.84	2.76	2.59	1.55	NA	2.71	NA	20.0	2.08	18.7	NA	NA	5.04	3.01	NA	NA	NA	3.24	2.88	0.23 Certified
PCB 44		3.73	3.75	3.99	2.65	NA	3.54	3.73	29.2	3.03	39.0	4.01	2.94	3.75	5.58	9.11	4.26	3.84	3.35	3.85	0.20 Certified
PCB 49		5.71	5.28	5.96	4.32	NA	3.54	NA	20.8	2.15	71.4	5.42	3.58	4.98	4.13	10.3	4.96	NA	5.38	5.66	0.23 Certified
PCB 52		6.42	6.50	6.73	4.33	NA	5.69	5.84	42.3	4.41	73.7	6.13	3.89	6.51	5.31	13.4	6.83	6.64	5.76	6.26	0.37 Certified
PCB 66		6.52	6.29	7.16	3.56	NA	5.61	6.58	68.4	7.13	64.9	NA	8.18	7.15	7.18	13.1	6.70	6.33	5.31	6.37	0.37 Certified
PCB 95		6.15	6.29	5.14	5.17	NA	5.65	NA	44.1	4.58	67.9	NA	2.77	5.85	5.54	NA	6.61	NA	4.94	6.04	0.36 Certified
PCB 99		5.92	5.67	6.17	3.68	NA	5.20	NA	36.9	3.84	71.6	6.11	3.25	6.15	6.57	NA	6.09	NA	5.50	5.92	0.27 Certified
PCB 101		11.2	10.3	11.4	7.86	NA	10.5	8.67	84.2	8.75	114	10.5	5.38	11.1	10.2	16.5	13.4	13.4	9.83	10.7	1.1 Certified
PCB 105		4.13	4.01	3.61	<3.4	NA	3.64	3.92	32.8	3.41	44.3	NA	NA	4.73	4.24	5.92	4.61	3.65	3.21	4.00	0.18 Certified
PCB 118		10.3	9.36	9.79	8.45	NA	9.76	9.80	83.9	8.72	122	NA	6.05	10.6	11.1	14.1	12.3	10.4	10.3	10.3	0.4 Certified
PCB 128		1.78	1.79	1.43	1.73	NA	1.63	1.71	18.0	1.87	20.6	NA	1.13	1.90	1.64	2.37	1.77	2.15	1.35	1.79	0.12 Certified
PCB 138		9.57	9.30	6.59	6.97	NA	11.4	9.00	87.6	9.11	127	NA	NA	13.4	12.0	14.4	12.2	13.6	10.4	9.2	1.4 Certified
PCB 149		7.17	6.63	6.41	5.44	NA	6.20	NA	46.9	4.87	71.1	NA	4.95	7.08	7.29	NA	6.47	NA	4.20	7.01	0.28 Certified
PCB 153		12.3	14.0	11.5	7.90	NA	10.5	11.4	80.2	8.34	164	NA	NA	15.6	11.5	19.2	11.7	11.2	15.5	12.3	0.8 Certified
PCB 156		0.753	0.700	0.571	0.935	NA	0.561	NA	10.2	1.05	21.8	7.75	NA	0.792	0.841	NA	0.720	NA	0.822	0.718	0.080 Certified
PCB 170		0.274	0.210	<0.3	<1.1	NA	<0.2	<0.5	1.69	0.175	5.89	NA	NA	<0.426	0.207	0.473	0.356	0.464	0.320	0.269	0.034 Certified
PCB 180		1.09	1.15	0.936	<0.87	NA	1.04	1.27	10.2	1.06	33.4	1.09	1.20	1.15	1.12	1.77	1.12	1.24	1.23	1.17	0.10 Certified
PCB 187		2.89	2.71	2.34	2.00	NA	2.56	3.60	23.4	2.43	32.1	NA	NA	2.76	2.57	3.74	2.66	2.41	2.50	2.94	0.15 Certified
PCB 194		<0.2	<0.2	<0.3	<0.60	NA	<0.2	NA	0.454	0.0473	1.01	DL	0.110	<0.431	0.0555	NA	<0.134	NA	0.0640	no target	Target
PCB 195		<0.2	<0.2	<0.3	<0.46	NA	<0.2	<0.5	<3.57	<0.722	1.14	NA	NA	<0.432	0.0130	NA	<0.134	<0.12	<0.11	no target	Target
PCB 206		<0.2	<0.1	<0.3	<0.51	NA	<0.2	<0.5	<3.57	<0.722	0.583	DL	0.0763	<0.428	0.0115	NA	<0.134	<0.098	0.0361	no target	Target
PCB 209		<0.2	<0.1	<0.3	<0.51	NA	<0.2	<0.5	<3.57	<0.722	0.383	DL	0.0323	<0.427	0.0110	NA	<0.134	<0.1	<0.1	no target	Target

*Lab 9 rev values are calculated on a wet mass basis as requested. The original submission (Lab 9) was calculated on a dry mass basis.

Table 8. Marine Sediment XII (Q03SED12): Laboratory means of three replicates and exercise assigned values - Water and PAHs
(reported to three significant figures)

Table 8. Marine Sediment XII (QA03SEDI2): Laboratory means of three replicates and exercise assigned values - water and PAHs																									
(reported to three significant figures)																									
Laboratory No.	1a	1b	1c	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	Exercise Assigned			
																						Value	s	%RSD	95% CI
Water (percent)	45.4	NA	45.1	44.0	45.7	49.0	54.6	45.0	43.9	43.7	45.2	44.4	43.3	44.3	45.5	43.9	45.0	44.9	43.7	44.7	44.7	45.5	2.7	5.9	1.5
TOC (percent)	NA	NA	NA	NA	3.21	NA	NA	NA	NA	1.82	NA	2.74	NA	NA	NA	NA	NA	NA	2.40	NA	3.02	2.59	0.71	27.2	0.88
PAHs																									
ng/g dry basis (reported to three significant figures)																									
Laboratory No.	1a	1b	1c	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	Exercise Assigned			
																						Value	s	%RSD	95% CI
naphthalene	121	109.0	118	49.5	137	64.4	151	75.1	102	23.3	31.7	142	50.4	158	NA	120	NA	62.4	81.0	211	109	117	39	33.6	22
2-methylnaphthalene	79.2	75.0	82.5	35.9	83.0	NA	96.3	58.0	70.2	19.1	31.87	101	DL	83.3	110	106	NA	49.4	55.6	158	78.5	80.6	29.3	36.4	16.2
1-methylnaphthalene	49.0	48.1	50.8	26.8	61.2	NA	50.0	43.1	40.9	13.1	ND	69.5	DL	55.6	82.0	61.8	NA	38.1	39.1	102	50.0	54.2	16.5	30.5	9.6
biphenyl	29.2	27.0	21.8	17.2	55.4	NA	34.3	28.4	27.3	8.45	ND	25.5	DL	28.0	19.9	30.0	NA	19.2	20.1	66.5	32.0	28.2	9.3	32.8	5.3
2,6-dimethylnaphthalene	35.2	25.3	22.4	27.6	NA	96.7	21.0	25.0	48.0	16.3	ND	52.7	DL	43.9	NA	61.3	NA	37.2	38.5	73.3	42.5	39.7	19.9	50.2	12.0
acenaphthylene	29.6	13.9	15.7	33.1	25.8	131.0	59.0	12.8	48.5	62.3	41.6	73.5	100	93.8	63.8	20.0	NA	48.6	64.8	74.3	99.0	52.0	34.5	66.4	18.4
acenaphthene	34.7	36.8	37.0	26.0	46.2	38.9	38.3	33.0	33.9	15.8	32.0	49.3	57.3	74.3	45.8	38.1	NA	23.9	31.0	49.9	39.7	37.1	7.4	20.0	4.1
1-methylphenanthrene	25.7	NA	29.3	24.4	NA	NA	31.7	NA	NA	NA	ND	39.1	DL	NA	NA	35.1	NA	23.2	31.4	53.3	17.6	28.6	6.6	23.1	5.1
fluorene	65.5	50.6	84.4	41.5	86.3	62.4	52.7	60.1	55.3	27.2	49.7	87.3	97.9	79.9	308	58.0	NA	37.8	57.8	68.2	54.3	62.6	15.2	24.3	8.1
phenanthrene	539	471	488	418	505	513	618	315	490	357	424	475	634	563	46.0	593	NA	394	403	733	561	505	100	19.7	53
anthracene	172	95.0	105	104	121	267	161	63.5	133	139	96.3	268	296	154	856	138	NA	96.2	94.8	168	215	147	60	40.9	32
1-methylphenanthrene	69.4	NA	65.5	61.6	NA	72.6	51.7	82.4	73.3	46.1	ND	86.7	NA	77.7	NA	92.2	NA	53.1	42.8	93.1	65.3	70.5	15.2	21.6	8.8
fluoranthene	1094	967	993	984	1069	1079	1263	613	1117	796	1062	1053	1523	1197	215	1283	NA	881	958	1507	1197	1070	203	18.9	112
pyrene	1129	960	980	1050	1174	1103	1267	626	1150	802	1047	1123	1563	1237	140	1383	NA	899	827	1530	1137	1099	216	19.6	115
benz[a]anthracene	378	410	364	369	443	486	508	250	352	493	419	652	770	454	14.9	575	NA	348	336	546	556	442	105	23.7	54
chrysene	547	477	NA	NA	584	875	1130	410	678	677	805	871	NA	840	NA	NA	NA	NA	NA	NA	NA	640	170	26.6	142
triphenylene	141	122	NA	NA	170	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	144	24	16.6	60
benzo[b]fluoranthene	1089	585	696	NA	855	1087	1320	262	1270	1293	1001	1643	NA	1040	NA	1210	NA	832	748	1098	NA	999	358	35.8	207
benzo[k]fluoranthene	281	275	283	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	280	4	1.5	11
benzo[e]fluoranthene	406	285	290	475	453	795	NA	217	422	391	1005	449	499	759	NA	NA	NA	NA	NA	NA	531	392	98	25.0	70
benzo[a]pyrene	590	461	549	660	650	NA	743	298	506	606	ND	769	746	700	1834	933	NA	612	494	902	938	657	186	28.3	107
benzo[a]pyrene	636	653	659	610	525	707	1327	361	640	610	691	1137	1110	659	225.2	865	NA	586	474	906	849	718	238	33.2	123
perylene	184	182	NA	185	295	NA	286	132	105	343	ND	182	225	170	2067	301	NA	181	132	274	234	211	60	28.6	36
indeno[1,2,3-cd]pyrene	608	697	578	555	577	752	766	335	405	692	623	1143	760	699	374	881	NA	540	481	820	942	680	214	31.5	118
dibenz[a,h]anthracene	112	142	59.2	111	99.1	181	203	48.2	125	239	194	277	136	173	NA	NA	NA	123	NA	NA	168	137	66	48.3	44
benzo[ghi]perylene	488	603	478	524	592	657	931	313	290	545	683	938	243	624	219	823	NA	470	414	817	821	608	200	32.9	103
chrysene+triphenylene			697	715									1240			1010		715	592	1090	901	817	185	22.6	154
benzo[b]fluoranthene				912																	1448				
benzo[k]fluoranthene							1310									1045		671	536	1151		943	327	34.7	406
benzo[b]fluoranthene													1357												
dibenz[a,h]anthracene																206				111	137				

Note: Bolded values were not used in the calculation of the exercise assigned value.

Table 9. Marine Sediment XII (QA03SED12): Laboratory means of three replicates and exercise assigned values - Pesticides

ng/g dry basis (reported to three significant figures)		Exercise Assigned																								
Laboratory No.		1a	1b	1c	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	Value	s	%RSD	95% CI
alpha-HCH (a-BHC)	<1	NA	<0.3	NA	NA	NA	<1.0	<1.40	NA	<0.5	0.360	ND	0.310	NA	<0.217	0.137	<0.573	0.230	DL	6.51	NA	<0.45	<2			
hexachlorobenzene	0.300	0.420	<0.3	NA	NA	NA	7.2	<1.50	NA	<1.0	0.384	ND	0.510	0.484	0.476	NA	NA	1.01	0.260	<0.709	0.242	0.194	0.315	0.123	39.0	0.153
gamma-HCH (g-BHC, lindane)	<1	NA	<0.3	NA	NA	NA	<1.0	<1.40	NA	<0.5	<1.66	ND	NA	DL	<0.285	0.123	<0.562	0.341	DL	<0.709	2.60	<0.52	<3			
beta-HCH (b-BHC)	<1	NA	<0.3	NA	NA	NA	<1.0	<1.40	NA	<1.0	<1.66	ND	0.163	NA	<0.309	NA	<0.579	0.156	DL	<0.709	NA	<0.65	<2			
heptachlor	<1	NA	<0.3	NA	NA	NA	<1.0	<1.50	NA	<1.0	<1.66	ND	NA	DL	0.586	0.857	<0.563	0.225	DL	<0.709	0.352	<0.56	<2			
aldrin	<1	NA	<0.3	NA	NA	NA	<1.0	<1.50	NA	<1.0	<1.66	ND	1.03	NA	<0.155	0.028	<0.569	0.126	DL	<0.709	0.155	<0.43	<2			
heptachlor epoxide	<1	NA	<0.3	NA	NA	NA	<1.0	<1.40	NA	<1.0	<1.66	ND	NA	DL	<0.128	NA	<0.563	0.205	DL	<0.709	0.269	0.198	<2			
oxychlorane	<1	<0.3	<0.3	NA	NA	NA	<1.0	<1.40	NA	<1.0	<1.66	ND	0.190	NA	<0.134	NA	10.4	<0.053	DL	<7.09	NA	0.391	<2			
gamma-chlordane	0.450	<0.5	<0.3	NA	NA	NA	1.25	<1.40	NA	<1.0	1.54	ND	NA	NA	<0.227	0.104	0.483	0.744	DL	0.291	NA	0.510	0.753	0.466	62.0	0.431
2,4'-DDE	<1	<0.9	0.588	NA	NA	NA	<4.6	<6.48	NA	<1.5	<1.66	ND	0.610	8.84	<0.446	10.1	1.25	0.912	DL	<0.709	NA	0.548	0.782	0.299	38.3	0.371
endosulfan I	<1	NA	<0.3	NA	NA	NA	<1.0	<1.40	NA	<1.5	<1.66	ND	NA	NA	NA	NA	<1.52	<0.101	DL	<7.09	0.174	<0.52	<2			
cis-chlordane (alpha-chlordane)	0.775	<0.6	0.776	NA	NA	NA	<1.0	<1.40	NA	<1.0	0.317	ND	1.30	0.561	<0.6	0.066	0.386	0.701	0.420	0.285	5.63	0.469	0.639	0.326	51.0	0.273
trans-nonachlor	0.290	<0.4	<0.3	NA	NA	NA	<1.0	<1.65	NA	<1.0	<1.66	ND	NA	0.390	<0.191	1.51	<0.566	0.466	DL	0.148	1.16	0.178	0.271	0.144	53.1	0.229
dieldrin	0.576	NA	0.881	NA	NA	NA	<1.0	<1.40	NA	<1.0	1.91	ND	1.16	NA	<0.964	NA	<1.50	0.627	1.31	<0.709	NA	0.390	0.978	0.523	53.5	0.484
4,4'-DDE	6.53	3.30	3.37	NA	NA	NA	4.7	11.2	NA	5.70	15.3	ND	5.69	8.84	2.38	4.52	9.83	7.25	6.93	4.80	7.45	7.64	7.30	3.28	44.8	1.98
2,4'-DDD	5.37	3.47	3.76	NA	NA	NA	E6.2	5.42	NA	5.75	<1.66	ND	11.0	DL	<0.239	2.80	9.73	5.49	8.55	4.79	NA	12.9	6.93	3.12	45.0	2.10
endrin	<1	NA	<0.3	NA	NA	NA	<2.0	<1.40	NA	<1.0	<1.66	ND	0.783	NA	<0.947	0.200	NA	<0.320	DL	<7.09	NA	<0.83	<2			
endosulfan II	<1	NA	<0.3	NA	NA	NA	NA	<1.40	NA	<2	<1.66	ND	16.9	NA	NA	NA	<1.55	<0.549	DL	<7.09	<0.1	<0.52	<2			
4,4'-DDD	13.4	5.28	12.4	NA	NA	NA	14	15.7	NA	16.9	14.5	ND	19.4	NA	16.0	8.85	NA	18.5	17.6	12.6	11.0	17.0	15.3	2.8	18.1	1.9
2,4'-DDT	4.72	13.8	5.36	NA	NA	NA	3.00	4.19	NA	4.06	<1.66	ND	5.10	NA	6.23	0.607	8.51	4.90	7.88	4.08	4.67	3.41	5.09	1.61	31.7	0.93
cis-nonachlor	0.490	<0.2	<0.3	NA	NA	NA	<1.0	<1.40	NA	<1	1.81	ND	2.23	NA	<0.196	5.15	<0.576	<0.342	DL	<0.709	NA	0.986	1.38	0.79	57.1	1.25
4,4'-DDT	13.7	20.4	11.3	NA	NA	NA	14	16.6	NA	17.5	17.9	ND	17.2	DL	40.2	13.0	27.2	25.2	30.9	25.5	10.9	12.5	18.6	6.3	34.0	3.7
mirex	<1	NA	<0.3	NA	NA	NA	<1.0	<1.50	NA	<2	<1.66	ND	NA	DL	<0.397	NA	5.62	0.105	DL	<0.709	0.239	<0.62	<2			
endosulfan sulfate	<1	NA	<0.3	NA	NA	NA	NA	<1.40	NA	<2	<1.66	ND	NA	NA	NA	NA	<0.572	0.104	DL	<7.09	4.25	<0.84	<2			
chlorpyrifos	<1	NA	NA	NA	NA	NA	NA	NA	NA	<2	NA	ND	NA	NA	NA	NA	NA	NA	1.31	<0.709	9.54	<0.52	<2			

Note: Bolded values were not used in the calculation of the exercise assigned value.

Table 10. Marine Sediment XII (QA03SED12): Laboratory means of three replicates and exercise assigned values - PCBs

ng/g dry basis (reported to three significant figures)																										
Laboratory No.	1a	1b	1c	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	Exercise Assigned				
																						Value	s	%RSD	95% CI	
PCB 8	0.902	0.823	1.01	0.826	NA	NA	<1.50	NA	1.13	1.51	ND	3.25	NA	<0.424	2.77	NA	1.01	2.24	<0.185	1.97	1.02	1.43	0.77	53.8	0.55	
PCB 18	3.47	2.46	3.09	3.84	NA	NA	2.26	NA	2.96	3.73	ND	4.28	0.906	<0.485	2.49	4.60	1.54	4.53	2.50	1.54	2.89	3.12	1.01	32.2	0.58	
PCB 28	4.91	2.77	3.64	3.54	NA	NA	4.61	NA	4.44	4.33	ND	6.23	NA	<0.182	NA	5.95	4.85	4.96	7.22	5.82	4.33	4.75	1.19	25.0	0.75	
PCB 31	5.11	2.70	4.66	2.96	NA	NA	NA	NA	4.63	4.99	ND	4.09	NA	<0.258	NA	6.64	2.78	NA	NA	NA	6.50	4.51	1.41	31.4	1.01	
PCB 44	6.73	6.40	7.84	7.40	NA	NA	9.64	NA	9.33	10.1	ND	13.5	9.26	<0.689	9.11	11.0	5.20	11.8	7.88	10.6	9.74	9.09	2.30	25.3	1.39	
PCB 49	5.05	4.40	5.22	7.03	NA	NA	NA	NA	7.50	5.05	ND	9.55	6.31	<0.285	5.83	8.01	2.75	7.31	5.07	NA	7.55	6.21	1.91	30.7	1.21	
PCB 52	13.5	12.3	12.9	11.6	NA	NA	16.7	NA	16.1	14.3	ND	26.6	15.2	17.5	12.8	20.6	8.97	18.2	14.6	20.4	18.9	16.1	4.6	28.3	2.8	
PCB 66	5.87	5.23	7.64	6.09	NA	NA	9.13	NA	9.22	11.6	ND	9.86	NA	8.59	14.3	12.3	5.49	8.06	8.39	10.2	9.28	8.46	2.22	26.3	1.34	
PCB 95	18.4	19.7	8.43	20.9	NA	NA	NA	NA	27.2	19.3	ND	44.7	NA	27.3	17.6	35.6	13.5	NA	21.7	NA	27.9	23.4	10.1	43.3	6.8	
PCB 99	3.77	7.59	<0.3	8.91	NA	NA	NA	NA	13.7	9.72	ND	21.7	14.0	14.2	9.13	16.6	7.03	NA	10.4	NA	15.2	11.5	5.3	46.4	3.8	
PCB 101	24.9	23.3	25.2	24.8	NA	NA	37.5	NA	37.4	37.2	ND	57.5	36.7	34.0	22.2	42.5	13.1	36.7	35.7	48.5	45.0	34.9	11.7	33.5	6.8	
PCB 105	8.56	7.39	6.94	17.4	NA	NA	14.2	NA	12.6	12.3	ND	21.9	NA	10.0	NA	16.7	6.22	11.0	11.4	9.50	12.0	12.2	4.5	37.2	2.7	
PCB 118	22.9	15.4	17.4	21.8	NA	NA	32.8	NA	33.1	28.5	ND	49.7	NA	32.5	22.3	40.6	14.8	27.2	27.6	19.4	34.9	27.6	10.0	36.4	6.1	
PCB 128	4.66	5.25	4.8	6.34	NA	NA	9.39	NA	9.14	7.85	ND	10.1	NA	6.53	8.25	11.8	3.69	9.97	8.17	6.12	8.30	7.65	2.50	32.7	1.51	
PCB 138	34.0	22.5	18.9	31.0	NA	NA	47.2	NA	59.6	43.6	ND	80.4	NA	37.4	NA	70.5	23.1	43.3	41.4	48.2	50.2	36.7	11.3	30.9	7.6	
PCB 149	20.7	20.7	20.4	20.4	NA	NA	NA	NA	33.8	25.2	ND	41.3	NA	26.3	26.9	43.5	17.3	NA	24.4	NA	24.6	24.6	26.6	8.9	33.6	6.0
PCB 153	39.0	31.3	22.7	27.1	NA	NA	40.9	NA	40.5	28.8	ND	73.2	NA	43.0	NA	70.6	17.1	55.6	29.9	24.3	67.7	41.5	19.2	46.3	11.6	
PCB 156	2.46	3.14	2.64	4.71	NA	NA	NA	NA	5.52	7.01	ND	14.1	5.31	<0.344	NA	7.51	2.67	NA	4.55	NA	4.13	4.43	1.80	40.7	1.29	
PCB 170	9.18	6.79	5.41	8.86	NA	NA	13.7	NA	11.4	10.2	ND	16.4	NA	13.4	NA	16.2	4.54	10.1	9.70	13.4	4.34	9.11	3.75	41.2	2.52	
PCB 180	14.7	13.7	12.4	13.8	NA	NA	24.7	NA	22.8	26.4	ND	28.1	26.4	28.9	27.8	28.7	10.0	19.4	16.0	16.0	20.9	19.1	6.2	32.4	3.7	
PCB 187	9.02	7.24	6.70	7.93	NA	NA	13.8	NA	12.4	13.1	ND	19.7	NA	11.0	NA	16.4	4.90	11.0	9.93	14.2	13.5	10.8	3.5	32.1	2.1	
PCB 194	2.16	2.63	2.22	2.64	NA	NA	NA	NA	5.23	4.32	ND	8.06	5.16	5.06	5.77	7.47	2.40	NA	2.70	NA	2.57	3.86	2.16	55.9	1.45	
PCB 195	1.58	1.19	2.23	1.03	NA	NA	2.09	NA	1.97	1.98	ND	3.68	NA	1.55	NA	2.34	0.959	2.14	1.31	1.27	3.13	1.79	0.63	35.3	0.40	
PCB 206	2.27	1.190	0.865	1.42	NA	NA	3.58	NA	3.45	4.26	ND	2.94	3.42	NA	5.43	3.90	0.926	4.06	1.65	2.21	2.89	2.57	1.25	48.5	0.75	
PCB 209	1.12	0.549	0.398	0.915	NA	NA	2.12	NA	2.37	3.74	ND	2.63	2.07	NA	1.30	2.06	0.373	3.37	1.09	1.05	0.935	1.62	1.10	67.5	0.63	

Note: Bolded values were not used in the calculation of the exercise assigned value.

Table 11. SRM 1941b: Laboratory mean three replicates and target values - water, TOC, and PAHs

Laboratory No.																					
Water (percent)																					
TOC (percent)																					
1941a19441944																					
ng/g dry basis (reported to three significant figures)																					
Laboratory No.																					
naphthalene																					
2-methylnaphthalene																					
1-methylnaphthalene																					
biphenyl																					
2,6-dimethylnaphthalene																					
acenaphthylene																					
acenaphthene																					
1,6,7-trimethylnaphthalene																					
fluorene																					
phenanthrene																					
anthracene																					
1-methylphenanthrene																					
fluoranthene																					
pyrene																					
benz[a]anthracene																					
chrysene																					
triphenylene																					
benzo[b]fluoranthene																					
benzo[k]fluoranthene																					
benzo[e]pyrene																					
benzo[a]pyrene																					
perylene																					
indeno[1,2,3-cd]pyrene																					
dibenz[a,h]anthracene																					
benzo[ghi]perylene																					
chrysene+triphenylene																					
benzo[b]+[j]fluoranthene																					
benzo[j]+[k]fluoranthene																					
benzo[b]+[a]fluoranthene																					
dibenz[a,h]+[a,c]anthracene																					

Table 12. SRM 1941b: Laboratory mean three replicates and target values - pesticides
ng/g dry basis (reported to three significant figures) 1941a 1944 1944

Laboratory No.	1a	1c	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	conc	95%CI	type
alpha-HCH (a-BHC)	<1	<0.3	NA	NA	<1.0	<2.00	NA	<0.5	<0.95	ND	0.423	NA	<0.0716	NA	<0.437	0.077	NA	<0.647	NA	<0.45	no target		Target
hexachlorobenzene	5.63	6.27	NA	NA	7.07	6.72	NA	6.26	3.15	ND	8.10	NA	32.5	NA	NA	9.34	5.84	5.99	5.57	7.53	5.83	0.38	Certified
gamma-HCH (g-BHC, lindane)	<1	<0.3	NA	NA	<1.0	<2.00	NA	<0.5	<0.95	ND	NA	NA	<0.0942	NA	<0.428	0.141	NA	<0.647	0.179	<0.65	no target		Target
beta-HCH (b-BHC)	<1	<0.3	NA	NA	<1.0	<2.00	NA	<0.5	<0.95	ND	NA	NA	<0.102	NA	<0.457	0.057	NA	<0.647	NA	0.250	no target		Target
heptachlor	<1	<0.3	NA	NA	<1.0	<2.10	NA	<0.5	<0.95	ND	0.117	NA	<0.079	NA	<0.429	0.065	NA	<0.647	0.142	0.142	no target		Target
aldrin	<1	<0.3	NA	NA	<1.0	<2.10	NA	<0.5	<0.95	ND	0.083	NA	<0.0512	NA	0.524	0.035	NA	<0.647	0.351	<0.43	no target		Target
heptachlor epoxide	<1	<0.3	NA	NA	<1.0	<2.50	NA	<0.5	<0.95	ND	0.087	NA	<0.0422	NA	<0.429	0.219	NA	<0.647	0.146	0.425	no target		Target
oxychlorane	<1	<0.3	NA	NA	<1.0	<2.00	NA	<0.5	<0.95	ND	NA	NA	1.91	NA	6.72	<0.053	NA	<0.647	NA	0.708	no target		Target
gamma-chlordane	0.586	0.53	NA	NA	E0.72	18.4	NA	0.622	0.672	ND	3.10	NA	12.2	NA	0.611	0.717	NA	30.0	NA	0.425	0.566	0.093	Certified
2,4'-DDE	<1	0.470	NA	NA	<1.6	16.8	NA	<1.0	<0.95	ND	0.150	NA	8.10	NA	0.557	0.308	NA	12.4	NA	0.239	0.38	0.12	Reference
endosulfan I	<1	<0.3	NA	NA	<1.0	<2.00	NA	<1.0	<0.95	ND	NA	NA	NA	NA	<1.16	<0.101	NA	<0.647	0.062	<0.52	no target		Target
cis-chlordane (alpha-chlordane)	0.869	0.870	NA	NA	E0.61	15.6	NA	0.570	0.355	ND	0.930	NA	9.92	NA	0.514	0.592	17.843	26.2	1.29	0.653	0.85	0.11	Certified
trans-nonachlor	0.441	0.300	NA	NA	E0.19	9.20	NA	<0.5	0.15	ND	0.157	NA	5.39	NA	<0.431	0.377	11.66	15.1	0.324	0.327	0.438	0.073	Certified
dieldrin	<1	0.730	NA	NA	<1.0	12.5	NA	<0.5	0.37	ND	0.710	NA	1.41	NA	<1.14	0.547	NA	<0.647	NA	0.631	no target		Target
4,4'-DDE	3.32	3.06	NA	NA	E1.3	62.5	NA	2.34	2.30	ND	2.41	NA	44.3	NA	4.25	2.75	NA	105	3.43	2.63	3.22	0.28	Certified
2,4'-DDD	<1	0.680	NA	NA	<1.0	34.2	NA	<1.0	<0.95	ND	2.86	NA	26.6	NA	1.81	0.376	NA	41.0	NA	2.50	no target		Target
endrin	<1	<0.3	NA	NA	<2.0	<2.00	NA	<0.5	<0.95	ND	0.323	NA	<0.319	NA	NA	<0.320	NA	<0.647	NA	<0.83	no target		Target
endosulfan II	<1	<0.3	NA	NA	NA	<2.00	NA	<2	<0.95	ND	5.77	NA	NA	NA	<1.18	<0.549	NA	<0.647	<0.1	<0.52	no target		Target
4,4'-DDD	4.73	4.19	NA	NA	2.23	88.8	NA	3.38	1.75	ND	2.91	NA	80.5	NA	NA	3.05	NA	205	4.66	3.37	4.66	0.46	Certified
2,4'-DDT	<1	<0.3	NA	NA	<2.0	3.06	NA	<1.0	<0.95	ND	0.097	NA	<0.0697	NA	<0.425	<0.166	NA	<0.647	<0.144	<0.64	no target		Target
cis-nonachlor	<1	0.480	NA	NA	E0.44	3.97	NA	<0.5	0.47	ND	0.297	NA	1.85	NA	<0.439	0.213	NA	6.66	NA	0.370	0.378	0.053	Certified
4,4'-DDT	1.15	1.32	NA	NA	<2.0	142	NA	<1.0	0.46	ND	0.813	NA	107	NA	<0.427	1.26	158.68	297	1.42	1.05	1.12	0.42	Reference
mirex	<1	<0.3	NA	NA	<1.0	<2.10	NA	<1.0	<0.95	ND	NA	NA	<0.131	NA	2.63	0.073	NA	<0.647	0.129	<0.62	no target		Target
endosulfan sulfate	<1	<0.3	NA	NA	NA	<24.0	NA	<2	<0.95	ND	NA	NA	NA	NA	<0.436	0.135	NA	<0.647	0.359	<0.84	no target		Target
chlorpyrifos	<1	NA	NA	NA	NA	NA	NA	<1.0	NA	ND	NA	NA	NA	NA	NA	NA	NA	<0.647	1.36	0.860	no target		Target

Table 13. SRM 1941b: Laboratory mean three replicates and target values - PCBs
ng/g dry basis (reported to three significant figures) 1941a 1944 1944

Laboratory No.	1a	1c	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20	conc	95%CI	type
PCB 8	1.58	1.26	1.31	NA	NA	23.6	NA	1.64	1.16	ND	2.36	NA	16.6	NA	NA	2.10	20.5	29.4	0.832	1.87	1.65	0.19	Certified
PCB 18	2.26	2.55	3.09	NA	NA	49.6	NA	2.10	1.76	ND	2.11	NA	41.5	NA	2.99	1.61	47.6	61.9	1.04	2.98	2.39	0.29	Certified
PCB 28	4.45	4.63	3.08	NA	NA	83.5	NA	3.99	3.05	ND	5.01	NA	55.6	NA	5.31	8.25	77.4	203	7.21	4.52	4.52	0.57	Certified
PCB 31	3.45	3.70	2.36	NA	NA	NA	NA	3.43	3.76	ND	2.40	NA	53.7	NA	5.05	4.14	NA	NA	NA	3.80	3.18	0.41	Certified
PCB 44	3.84	4.01	2.93	NA	NA	55.9	NA	3.75	3.53	ND	3.61	NA	34.9	NA	4.23	5.22	66.1	97.0	4.61	3.61	3.85	0.20	Certified
PCB 49	4.31	4.08	3.50	NA	NA	NA	NA	3.92	3.00	ND	4.54	NA	36.0	NA	4.14	3.32	50.8	57.3	NA	4.39	4.34	0.28	Certified
PCB 52	5.35	5.79	4.38	NA	NA	64.2	NA	5.13	3.28	ND	6.30	NA	47.7	NA	5.93	5.48	86.2	112	6.25	6.15	5.24	0.28	Certified
PCB 66	4.93	5.88	3.88	NA	NA	53.7	NA	4.89	4.09	ND	5.09	NA	42.3	NA	6.24	6.46	60.3	86.3	4.63	5.33	4.96	0.53	Certified
PCB 95	3.77	3.70	3.48	NA	NA	NA	NA	3.99	4.25	ND	4.27	NA	30.2	NA	4.29	3.23	NA	63.0	NA	4.64	3.93	0.62	Certified
PCB 99	2.88	0.780	2.12	NA	NA	NA	NA	2.84	2.14	ND	4.13	NA	19.0	NA	3.24	2.97	NA	34.9	NA	2.50	2.90	0.36	Certified
PCB 101	5.36	5.03	4.51	NA	NA	57.3	NA	5.20	4.43	ND	6.10	NA	42.6	NA	6.25	3.34	95.3	96.0	5.95	5.25	5.11	0.34	Certified
PCB 105	1.38	1.36	<2.1	NA	NA	18.8	NA	1.51	0.808	ND	1.44	NA	17.2	NA	2.11	1.53	28.7	32.8	0.544	1.16	1.43	0.10	Certified
PCB 118	4.27	4.26	3.90	NA	NA	47.0	NA	4.21	3.16	ND	3.62	NA	37.5	NA	5.21	4.56	66.1	76.3	3.34	3.85	4.23	0.19	Certified
PCB 128	0.702	0.640	1.34	NA	NA	6.94	NA	0.672	0.379	ND	0.610	NA	6.63	NA	0.854	0.689	18.3	14.9	0.18	0.588	0.696	0.044	Certified
PCB 138	3.70	2.86	3.13	NA	NA	52.9	NA	5.23	2.83	ND	5.95	NA	26.8	NA	6.35	4.92	73.1	81.5	1.81	3.95	3.6	0.28	Certified
PCB 149	4.37	4.29	3.66	NA	NA	NA	NA	4.23	2.98	ND	4.28	NA	28.3	NA	5.03	5.55	NA	65.1	NA	3.92	4.35	0.26	Certified
PCB 153	5.31	5.40	6.78	NA	NA	52.7	NA	5.00	2.73	ND	6.20	NA	53.9	NA	7.78	5.03	98.2	75.4	4.04	5.74	5.47	0.32	Certified
PCB 156	0.521	0.380	0.562	NA	NA	NA	NA	0.396	0.761	ND	3.05	NA	2.83	NA	0.600	0.520	NA	7.73	NA	0.500	0.507	0.090	Certified
PCB 170	1.29	1.14	1.40	NA	NA	17.0	NA	1.26	0.693	ND	23.1	NA	12.6	NA	1.47	1.14	21.6	18.4	0.507	1.62	1.35	0.09	Certified
PCB 180	3.44	2.98	2.58	NA	NA	37.6	NA	3.07	2.25	ND	3.95	NA	35.8	NA	3.40	3.33	41.2	36.6	2.97	2.77	3.24	0.51	Certified
PCB 187	2.26	2.01	2.14	NA	NA	20.9	NA	2.14	1.74	ND	5.74	NA	13.0	NA	2.22	1.91	25.8	25.1	2.29	2.58	2.17	0.22	Certified
PCB 194	1.09	0.820	0.674	NA	NA	NA	NA	0.890	0.826	ND	1.64	NA	9.92	NA	1.30	1.16	NA	5.85	NA	0.824	1.04	0.06	Certified
PCB 195	<1	0.760	0.271	NA	NA	3.36	NA	0.245	0.240	ND	1.37	NA	2.57	NA	<0.434	0.369	3.63	2.97	0.466	0.827	0.645	0.060	Certified
PCB 206	<2	2.15	1.75	NA	NA	7.38	NA	2.47	1.61	ND	2.40	NA	NA	NA	2.69	2.71	9.44	3.75	1.19	2.26	2.42	0.19	Certified
PCB 209	4.71	4.42	2.80	NA	NA	6.09	NA	4.92	3.44	ND	5.16	NA	NA	NA	4.71	5.45	12.2	2.85	5.74	3.88	4.86	0.45	Certified

Table 14. Mussel Tissue XI (QA03TIS11): z scores (25% by laboratory) - PAHs and Water

(z=+1 is 25% higher than the exercise assigned value; z=-1 is 25% lower than the exercise assigned value)

Laboratory No.	1a	1b	1c	2	4	7	8	9	9 rev*	11	12	14	15	16	17	18	19	20
Water (percent)	0.0		-0.1			0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	-0.3	0.0	0.0	0.1
PAHs																		
Laboratory No.	1a	1b	1c	2	4	7	8	9	9 rev*	11	12	14	15	16	17	18	19	20
naphthalene	-0.5	2.9	0.0			0.2	-1.4	139.0	8.5	26.9	0.5		-1.7		-1.8	6.0		
2-methylnaphthalene	1.6	1.6	5.3			1.3	-1.0	58.6	1.5	55.9	-0.9		-1.1		-0.8	3.5		1.6
1-methylnaphthalene	1.0	0.6	4.1				-1.5	47.2	0.5	53.9	-1.2	79.0	-1.8		-0.9	3.2		0.4
biphenyl	-0.2	0.6	1.6					45.6	0.3	40.8			-0.1		-1.9	4.6		
2,6-dimethylnaphthalene	0.1	-1.0	0.5			0.7	1.0	47.4	0.5	64.9	-1.3		0.1		0.1	2.8	-0.3	-0.7
acenaphthylene	-0.3		-0.7					51.5	0.8	142.5	3.1		-0.8		-0.2	6.2		2.0
acenaphthene	-1.2		2.8					24.3	-1.6	56.4	0.3		-1.4		-1.5	1.3		-0.5
1,6,7-trimethylnaphthalene	0.4		2.4							74.2	-1.6		0.6		-0.3	3.7	2.1	-1.2
fluorene	-0.9	-1.4	1.8				0.7			50.2		-0.6	-1.2		-2.0	2.4		-1.3
phenanthrene	0.0	0.3	0.6	-0.9		-0.5	7.9	54.2	1.1	41.8	-0.3	-0.2	0.4		-1.0	0.4	0.5	0.1
anthracene	-0.1		3.1					69.6	2.4	103.1		0.3	0.1		-0.5	2.7		
1-methylphenanthrene	0.6		1.0	-0.3		-0.6	0.9	32.2	-0.8	48.3			0.7		-1.3	-0.7	-0.3	0.0
fluoranthene	-0.1	0.2	0.7	-0.7		-0.5	0.5	31.7	-0.9	42.9	-0.7	1.9	0.5		-1.0	0.0	0.3	0.1
pyrene	0.3	0.0	0.7	-0.5		-0.3	0.7	33.4	-0.7	47.7	-0.5	0.2	0.8		-0.8	-0.7	0.1	0.0
benz[a]anthracene	-0.6	0.0	1.4	-1.1		0.4	0.4	41.4	0.0	52.9	-0.4		2.2		-1.0	1.8	0.7	0.1
chrysene	-0.6	-0.5				1.1	2.5	50.1	0.7	60.0					0.5			
triphenylene	0.0	0.0																
benzo[b]fluoranthene	-0.2	0.1	-0.8			-0.2	1.0	53.9	1.1	62.9			0.5		-1.0	0.8	-0.1	
benzo[j]fluoranthene	-0.4	-0.4	-1.0												1.8			
benzo[k]fluoranthene	-0.1	0.0	-0.5			-1.3	3.1	28.8	-1.1	28.1	0.2	2.6						-1.3
benzo[e]pyrene	-0.3	0.2	-0.5	-0.5		-1.2	1.1	34.2	-0.7	38.7	-0.2	-2.6	0.6		-0.6	0.0	0.3	0.8
benzo[a]pyrene	-1.1	-0.7	10.9				0.2			46.0	2.2		0.2		-1.7	2.3		-1.3
perylene	-1.0	0.8					0.4			41.6	-0.5		0.5		-1.6	1.9		-0.5
indeno[1,2,3-cd]pyrene	-1.3	0.6	-1.0				0.5	27.8	-1.2	32.3	0.1		0.5		-1.7	3.7		-1.3
dibenzo[a,h]anthracene	1.0	1.8	-1.6							42.0	12.6				-1.2			0.0
benzo[ghi]perylene	-1.3	0.9	-0.2				-0.2	27.2	-1.3	37.2	-2.6		0.8		-1.6	2.9		-1.2
chrysene/triphenylene			1.1	-0.6							-0.3		1.6			0.7	0.8	0.3
benzo[b+j]fluoranthene				-0.5							0.0							0.5
benzo[b+a]fluoranthene																		
benzo[j+k]fluoranthene													0.2			0.2	-0.4	
dibenzo[a,h+a,c]anthracene													-1.7			1.7		

*Lab 9 rev values are calculated on a wet mass basis as requested. The original submission (Lab 9) was calculated on a dry mass basis.

Table 15. Mussel Tissue XI (QA03TIS11): z scores (25% by laboratory) - Pesticides

(A z-score (25%) = +1 if the laboratory's submitted mean value is 25% higher than the exercise assigned value.)

Laboratory No.	1a	1b	1c	2	4	7	8	9	9 rev*	11	12	14	15	16	17	18	19	20
alpha-HCH (a-BHC)																		
hexachlorobenzene																		
gamma-HCH (g-BHC,lindane)																		
aldrin																		
heptachlor epoxide																		
oxychlorodane			0.5							41.7						206.1		-0.5
endosulfan I																		
cis-chlordane (alpha-chlordane)	0.1	1.3	0.6		-0.2	-0.8	1.5	33.5	-0.7	46.9	0.6	-1.1	0.1	0.0	0.3	-1.0	4.8	-1.4
trans-nonachlor	0.1	1.2	-0.2		-1.3	-1.0	-0.1	31.0	-0.9	48.1	-0.1	0.5	-0.2	2.0	0.3	-1.3	0.6	-1.5
dieldrin	0.3		0.4				0.0	47.2	0.5	81.7				-1.4				-0.7
4,4'-DDE	0.1	0.5	0.8		-0.1	-1.0	0.3	67.4	2.3	50.9	0.4	-1.6	1.2	0.0	0.5	-0.3	0.4	-1.1
endrin																		
endosulfan II																		
4,4'-DDD	-0.1	1.7	-0.2		-2.0	-0.8	-0.3	43.3	0.2	44.1		-1.5	3.9	-1.2	0.6	-0.6	1.4	-1.0
2,4'-DDT	-1.1		1.2							45.4		5.5					1.3	-1.4
cis-nonachlor	0.0	2.5	-1.0					72.1	2.6	78.1		2.1	0.2	-2.4		-1.4		0.1
4,4'-DDT	-0.4	1.5	23.5					42.9	0.1	39.3		4.0	1.3	-1.2	1.2		-0.3	-2.1
mirex																		
endosulfan sulfate																		
chlorpyrifos																		

*Lab 9 rev values are calculated on a wet mass basis as requested. The original submission (Lab 9) was calculated on a dry mass basis.

Table 16. Mussel Tissue XI (QA03TIS11): z scores (25 % by laboratory) - PCBs

(A z-score (25%) = +1 if the laboratory's submitted mean value is 25% higher than the exercise assigned value.)

Laboratory No.	1a	1b	1c	2	4	7	8	9	9 rev*	11	12	14	15	16	17	18	19	20
PCB 8	-1.6	-1.3	-1.0			-1.7		26.9	-1.3	262.8				-1.2	5.5		1.0	0.2
PCB 18	0.5	0.9	1.1			-1.3	-0.4	38.3	-0.3	61.5	-0.4	-1.2	1.3	-1.0	1.2	-0.1	-0.1	-0.4
PCB 28	0.2	0.1	0.8	-0.8		-0.3	0.2	35.5	-0.5	55.0			-0.6	0.9	0.2	4.0	-0.3	-0.5
PCB 31	0.6	-0.2	0.6	-1.3		0.2		20.3	-1.9	23.8			3.1	-0.1				0.1
PCB 44	-0.1	0.1	0.4	-0.6		0.0	-0.2	35.9	-0.5	45.1	0.0	-1.1	0.1	2.0	0.2	0.1	0.0	-0.7
PCB 49	1.4	0.3	1.9	-0.4		-0.5		14.7	-2.4	60.0	0.0	-1.1	0.1	-0.8	0.1	-0.6		-0.2
PCB 52	0.2	0.6	1.0	-0.6		-0.1	-0.1	26.1	-1.4	55.4	-0.1	-1.4	0.6	-0.1	0.5	0.0	0.5	-0.5
PCB 66	-1.0	0.0	0.4	-1.4		-0.2	0.3	45.6	0.3	42.7		0.5	0.6	0.8	0.2	-0.5	0.0	-1.0
PCB 95	-1.3	0.5	0.0	0.8		0.3		32.9	-0.8	55.0		-1.5	0.3	0.2		-0.1		-0.8
PCB 99	0.3	-0.2	1.7	-1.0		-0.2		20.7	-1.8	54.3	-0.2	-1.9	0.2	0.4		-0.5		-0.5
PCB 101	0.2	0.0	0.9	-0.6		-0.1	-0.6	31.6	-0.9	50.9	-0.3	-2.0	0.3	-0.1	0.1	0.3	0.3	-0.5
PCB 105	0.4	0.0	0.1			-0.1	0.2	36.4	-0.5	51.2			0.7	0.2	0.3	-0.1	-0.2	-1.5
PCB 118	0.5	-0.3	-0.5	-0.3		0.1	-0.4	32.4	-0.8	52.6		-1.8	0.3	0.4	0.0	0.2	0.3	-0.3
PCB 128	0.6	0.2	0.0	0.0		0.2	0.0	43.2	0.1	54.4		-1.4	0.4	-0.2	0.1	0.0	1.2	-1.2
PCB 138	0.4	-0.5	-1.7	-0.9		0.6	-0.3	32.6	-0.8	53.2			1.1	0.4	0.3	-0.1	1.3	-0.4
PCB 149	0.1	0.1	0.5	0.0		0.2		28.4	-1.2	51.3		-1.1	0.4	0.4		-0.6		-1.6
PCB 170	-0.3	-1.5						33.7	-0.7	120.9				-1.5	1.0		0.5	3.3
PCB 180	1.1	0.0	0.1			-0.2	-1.0	35.9	-0.5	191.9	-0.9	1.1	0.0	0.2	0.5	0.9	0.2	-1.4
PCB 187	0.3	0.2	-0.1	-0.5		0.2	0.5	36.7	-0.4	54.2			0.2	0.1	0.4	-0.4	-0.5	-0.6
PCB 194																		
PCB 195																		
PCB 206																		
PCB 209																		

*Lab 9 rev values are calculated on a wet mass basis as requested. The original submission (Lab 9) was calculated on a dry mass basis.

Table 17. Marine Sediment XII (QA03SED12): z scores (25% by laboratory) - PAHs, Water, and TOC

(A z-score (25%) = +1 if the laboratory's submitted mean value is 25% higher than the exercise assigned value.)

Laboratory No.	1a	1b	1c	2	3	1-b	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20
Water (percent)	0.0		0.0	-0.1	0.0	0.3	0.8	0.0	-0.1	-0.2	0.0	-0.1	-0.2	-0.1	0.0	-0.1	0.0	0.0	-0.2	-0.1	-0.1
TOC (percent)					1.0				-1.2			0.2							-0.3		0.7

PAHs

Laboratory No.	1a	1b	1c	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20
naphthalene	0.1	-0.3	0.0	-2.3	0.7	-1.8	1.1	-1.4	-0.5	-3.2	-2.9	0.9	-2.3	1.4		0.1		-1.9	-1.2	3.2	-0.3
2-methylnaphthalene	-0.1	-0.3	0.1	-2.2	0.1		0.8	-1.1	-0.5	-3.0	-2.4	1.0		0.1	1.4	1.3		-1.5	-1.2	3.9	-0.1
1-methylnaphthalene	-0.4	-0.5	-0.3	-2.0	0.5		-0.3	-0.8	-1.0	-3.0		1.1		0.1	2.0	0.6		-1.2	-1.1	3.5	-0.3
biphenyl	0.1	-0.2	-0.9	-1.6	3.8		0.9	0.0	-0.1	-2.8		-0.4		0.0	-1.2	0.2		-1.3	-1.2	5.4	0.5
2,6-dimethylnaphthalene	-0.5	-1.5	-1.7	-1.2		5.7	-1.9	-1.5	0.8	-2.4		1.3		0.4		2.2		-0.2	-0.1	3.4	0.3
acenaphthylene	-1.7	-2.9	-2.8	-1.4	-2.0	6.1	0.5	-3.0	-0.3	0.8	-0.8	1.7	3.7	3.2	0.9	-2.5		-0.3	1.0	1.7	3.6
acenaphthene	-0.3	0.0	0.0	-1.2	1.0	0.2	0.1	-0.4	-0.3	-2.3	-0.6	1.3	2.2	4.0	0.9	0.1		-1.4	-0.7	1.4	0.3
1,6,7-trimethylnaphthalene	-0.4		0.1	-0.6			0.4					1.5				0.9		-0.8	0.4	3.5	-1.5
fluorene	0.2	-0.8	1.4	-1.3	1.5	0.0	-0.6	-0.2	-0.5	-2.3	-0.8	1.6	2.3	1.1	15.7	-0.3		-1.6	-0.3	0.4	-0.5
phenanthrene	0.3	-0.3	-0.1	-0.7	0.0	0.1	0.9	-1.5	-0.1	-1.2	-0.6	-0.2	1.0	0.5	-3.6	0.7		-0.9	-0.8	1.8	0.4
anthracene	0.7	-1.4	-1.1	-1.2	-0.7	3.3	0.4	-2.3	-0.4	-0.2	-1.4	3.3	4.1	0.2	19.3	-0.3		-1.4	-1.4	0.6	1.8
1-methylphenanthrene	-0.1		-0.3	-0.5		0.1	-1.1	0.7	0.2	-1.4		0.9		0.4		1.2		-1.0	-1.6	1.3	-0.3
fluoranthene	0.1	-0.4	-0.3	-0.3	0.0	0.0	0.7	-1.7	0.2	-1.0	0.0	-0.1	1.7	0.5	-3.2	0.8		-0.7	-0.4	1.6	0.5
pyrene	0.1	-0.5	-0.4	-0.2	0.3	0.0	0.6	-1.7	0.2	-1.1	-0.2	0.1	1.7	0.5	-3.9	1.0		-0.7	-1.0	1.6	0.1
benz[a]anthracene	-0.6	-0.3	-0.7	-0.7	0.0	0.4	0.6	-1.7	-0.8	0.5	-0.2	1.9	3.0	0.1	-3.9	1.2		-0.9	-1.0	0.9	1.0
chrysene	-0.6	-1.0			-0.3	1.5	3.1	-1.4	0.2	0.2	1.0	1.4		1.3							
triphenylene	-0.1	-0.6			0.7																
benzo[b]fluoranthene	0.4	-1.7	-1.2		-0.6	0.4	1.3	-3.0	1.1	1.2	0.0	2.6		0.2		0.8		-0.7	-1.0	0.4	
benzo[j]fluoranthene	0.0	-0.1	0.1																		
benzo[k]fluoranthene	0.1	-1.1	-1.0	0.8	0.6	4.1		-1.8	0.3	0.0	6.3	0.6	1.1	3.7							1.4
benzo[e]pyrene	-0.4	-1.2	-0.7	0.0	0.0		0.5	-2.2	-0.9	-0.3		0.7	0.5	0.3	7.2	1.7		-0.3	-1.0	1.5	1.7
benzo[a]pyrene	-0.5	-0.4	-0.3	-0.6	-1.1	-0.1	3.4	-2.0	-0.4	-0.6	-0.1	2.3	2.2	-0.3	-2.7	0.8		-0.7	-1.4	1.0	0.7
perylene	-0.5	-0.5		-0.5	1.6		1.4	-1.5	-2.0	2.5		-0.5	0.3	-0.8	35.2	1.7		-0.6	-1.5	1.2	0.4
indeno[1,2,3-cd]pyrene	-0.4	0.1	-0.6	-0.7	-0.6	0.4	0.5	-2.0	-1.6	0.1	-0.3	2.7	0.5	0.1	-1.8	1.2		-0.8	-1.2	0.8	1.5
dibenz[a,h]anthracene	-0.7	0.1	-2.3	-0.8	-1.1	1.3	1.9	-2.6	-0.4	3.0	1.7	4.1	0.0	1.1				-0.4			0.9
benzo[ghi]perylene	-0.8	0.0	-0.9	-0.6	-0.1	0.3	2.1	-1.9	-2.1	-0.4	0.5	2.2	-2.4	0.1	-2.6	1.4		-0.9	-1.3	1.4	1.4
chrysene+triphenylene			-0.6	-0.5									2.1			0.9		-0.5	-1.1	1.3	0.4
benzo[j]+[k]fluoranthene							1.6									0.4		-1.2	-1.7	0.9	

Table 18. Marine Sediment XII (QA03SED12): z scores (25%) by laboratory - Pesticides
(A z-score (25%) = +1 if the laboratory's submitted mean value is 25% higher than the exercise assigned value.)

Laboratory No.	1a	1b	1c	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20
alpha-HCH (a-BHC)																					
hexachlorobenzene	-0.2	1.3				87.4				0.9		2.5	2.1	2.0			8.8	-0.7		-0.9	-1.5
gamma-HCH (g-BHC, lindane)																					
aldrin																					
heptachlor epoxide																					
oxychlorodane																					
endosulfan I																					
cis-chlordane (alpha-chlordane)	0.9		0.9							-2.0		4.1	-0.5		-3.6	-1.6	0.4	-1.4	-2.2	31.2	-1.1
trans-nonachlor	0.3												1.8		18.3		2.9		-1.8	13.1	-1.4
dieldrin	-1.6		-0.4							3.8		0.7					-1.4	1.4			-2.4
4,4'-DDE	-0.4	-2.2	-2.2			-1.4	2.1		-0.9	4.4		-0.9	0.8	-2.7	-1.5	1.4	0.0	-0.2	-1.4	0.1	0.2
endrin																					
endosulfan II																					
4,4'-DDD	-0.5	-2.6	-0.8			-0.3	0.1		0.4	-0.2		1.1		0.2	-1.7		0.8	0.6	-0.7	-1.1	0.4
2,4'-DDT	-0.3	6.9	0.2			-1.6	-0.7		-0.8			0.0		0.9	-3.5	2.7	-0.1	2.2	-0.8	-0.3	-1.3
cis-nonachlor	-2.6									1.2		2.5			10.9						-1.1
4,4'-DDT	-1.1	0.4	-1.6			-1.0	-0.4		-0.2	-0.2		-0.3		4.6	-1.2	1.8	1.4	2.6	1.5	-1.7	-1.3
mirex																					
endosulfan sulfate																					
chlorpyrifos																					

Table 19. Marine Sediment XII (QA03SED12): z scores (25% by laboratory) - PCBs
(A z-score (25%) = +1 if the laboratory's submitted mean value is 25% higher than the exercise assigned value.)

Laboratory No.	1a	1b	1c	2	3	4	5	6	7	9	10	11	12	13	14	15	16	17	18	19	20
PCB 8	-1.5	-1.7	-1.2	-1.7					-0.8	0.2		5.1			3.8		-1.2	2.3		1.5	-1.1
PCB 18	0.5	-0.8	0.0	0.9			-1.1		-0.2	0.8		1.5	-2.8		-0.8	1.9	-2.0	1.8	-0.8	-2.0	-0.3
PCB 28	0.1	-1.7	-0.9	-1.0			-0.1		-0.3	-0.4		1.2				1.0	0.1	0.2	2.1	0.9	-0.4
PCB 31	0.5	-1.6	0.1	-1.4					0.1	0.4		-0.4				1.9	-1.5				1.8
PCB 44	-1.0	-1.2	-0.5	-0.7			0.2		0.1	0.5		2.0	0.1		0.0	0.8	-1.7	1.2	-0.5	0.7	0.3
PCB 49	-0.7	-1.2	-0.6	0.5					0.8	-0.7		2.2	0.1		-0.2	1.2	-2.2	0.7	-0.7		0.9
PCB 52	-0.7	-0.9	-0.8	-1.1			0.1		0.0	-0.5		2.6	-0.2	0.3	-0.8	1.1	-1.8	0.5	-0.4	1.1	0.7
PCB 66	-1.2	-1.5	-0.4	-1.1			0.3		0.4	1.5		0.7		0.1	2.8	1.8	-1.4	-0.2	0.0	0.8	0.4
PCB 95	-0.9	-0.6	-2.6	-0.4					0.7	-0.7		3.6		0.7	-1.0	2.1	-1.7		-0.3		0.8
PCB 99	-2.7	-1.4		-0.9					0.8	-0.6		3.6	0.9	1.0	-0.8	1.8	-1.5		-0.4		1.3
PCB 101	-1.2	-1.3	-1.1	-1.2			0.3		0.3	0.3		2.6	0.2	-0.1	-1.5	0.9	-2.5	0.2	0.1	1.6	1.1
PCB 105	-1.2	-1.6	-1.7	1.7			0.7		0.1	0.0		3.2		-0.7		1.5	-2.0	-0.4	-0.3	-0.9	-0.1
PCB 118	-0.7	-1.8	-1.5	-0.8			0.8		0.8	0.1		3.2		0.7	-0.8	1.9	-1.8	-0.1	0.0	-1.2	1.1
PCB 128	-1.6	-1.3	-1.5	-0.7			0.9		0.8	0.1		1.3		-0.6	0.3	2.2	-2.1	1.2	0.3	-0.8	0.3
PCB 138	-0.3	-1.5	-1.9	-0.6			1.1		2.5	0.8		4.8		0.1		3.7	-1.5	0.7	0.5	1.3	1.5
PCB 149	-0.9	-0.9	-0.9	-0.9					1.1	-0.2		2.2		0.0	0.0	2.6	-1.4		-0.3		-0.3
PCB 170	0.0	-1.0	-1.6	-0.1			2.0		1.0	0.5		3.2		1.9		3.1	-2.0	0.4	0.3	1.9	-2.1
PCB 180	-0.9	-1.1	-1.4	-1.1			1.2		0.8	1.5		1.9	1.5	2.1	1.8	2.0	-1.9	0.1	-0.7	-0.6	0.4
PCB 187	-0.7	-1.3	-1.5	-1.1			1.1		0.6	0.8		3.3		0.1		2.1	-2.2	0.1	-0.3	1.3	1.0
PCB 194	-1.8	-1.3	-1.7	-1.3					1.4	0.5		4.4	1.4	1.2	2.0	3.8	-1.5		-1.2		-1.3
PCB 195	-0.5	-1.3	1.0	-1.7			0.7		0.4	0.4		4.2		-0.5		1.2	-1.9	0.8	-1.1	-1.2	3.0
PCB 206	-0.5	-2.1	-2.7	-1.8			1.6		1.4	2.6		0.6	1.3		4.4	2.1	-2.6	2.3	-1.4	-0.6	0.5
PCB 209	-1.2	-2.6	-3.0	-1.7			1.2		1.8	5.2		2.5	1.1		-0.8	1.1	-3.1	4.3	-1.3	-1.4	-1.7

Table 20. p scores (15%) for water, TEO, and PAHs in Mussel Tissue XI and SRM 1974b

Laboratory No.	1a QA03TIS11	1a 1974b	1b QA03TIS11	1b 1974b	1c QA03TIS11	1c 1974b	2 QA03TIS11	2 1974b	4 QA03TIS11	4 1974b	7 QA03TIS11	7 1974b	8 QA03TIS11	8 1974b	9 QA03TIS11	9 1974b	9 rev QA03TIS11	9 rev 1974b
Water (percent)	0.01	0.03			0.01	0.01												
TEO (percent)	0.06	0.23		0.23	0.32	1.70												
naphthalene	0.11	0.23	0.39	0.23	0.33	0.04												
2-methylnaphthalene	0.11	0.08	0.18	0.17	0.25	1.00												
1-methylnaphthalene	0.15	0.15	0.29	0.38	0.31	0.41												
phenyl	0.03	0.06	1.17	0.58	0.66	1.15												
2,6-dimethylnaphthalene	0.12	0.31	0.21		0.12													
acenaphthylene	0.07	0.37		0.09	0.66	0.68												
acenaphthene	0.03	0.28		2.14	0.42	0.17												
1,6,7-trimethylnaphthalene	0.16	0.07			0.30	0.91												
fluorene	0.12	0.08	0.44	0.24	0.37	0.34												
phenanthrene	0.15	0.20	0.20	0.12	0.10	2.06												
anthracene	0.05	0.06		0.12	0.41	1.82												
1-methylphenanthrene	0.08	0.27			0.22	0.30												
fluoranthene	0.09	0.08	0.15	0.06	0.09	0.19												
pyrene	0.20	0.11	0.15	0.00	0.11	0.14												
benz[a]anthracene	0.05	0.09	0.16	0.42	0.19	0.10												
chrysene	0.19	0.08	0.03	0.13	0.18	0.37												
triphenylene	0.26	0.19	0.16	0.10														
benzo[b]fluoranthene	0.07	0.14	0.10	0.14	0.15	0.30												
benzo[j]fluoranthene	0.08	0.15	0.47	0.20	0.12	0.26												
benzo[k]fluoranthene	0.09	0.11	0.46	0.31	0.05	0.15												
benzofluoranthene	0.05	0.23	0.07	0.14	0.19	0.12												
benzofluoranthene	0.21	0.07	0.44	0.33	0.38	1.08												
perylene	0.07	0.26	0.19	1.19														
indeno[1,2,3-cd]pyrene	0.20	0.14	0.21	0.21	0.23	0.57												
benzo[a]anthracene	0.38	0.09	0.65	0.68	0.36	0.51												
benzo[ghi]perylene	0.21	0.07	0.07	0.10	0.27	0.31												

*Lab 9 rev values are calculated on a wet mass basis as requested. The original submission (Lab 9) was calculated on a dry mass basis.

Table 20 (cont). p scores (15%) for water, TEO, and PAHs in Mussel Tissue XI and SRM 1974b

Laboratory No.	11	11	12	12	14	14	15	15	16	16	17	17	18	18	19	19	20	20
	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b
Water (percent)	0.03	1.06	0.03	0.04	0.00	0.04	0.01	0.01	0.02	0.06	0.91	0.91	0.08	0.07	0.01	0.01	0.07	0.84
TEO (percent)	0.80	2.07	1.51	0.54	0.87	0.02	0.56	0.93	1.96	1.23	0.99	0.37	2.66	1.92	0.10	0.06	0.95	
naphthalene	0.64	2.00	1.10	0.51			0.31	0.16			1.07	0.72	0.47	1.18				
2-methylnaphthalene	0.37	2.06	0.38	0.60	1.04	0.06	0.34	0.26			1.15	0.78	1.43	1.88				
1-methylnaphthalene	0.32	1.72	0.33				0.37	0.22			1.59	0.77	0.83	2.38				
biphenyl	0.68	1.47	0.46	0.61			0.18	0.31			0.83	0.50	1.55	1.53	0.31			
2,6-dimethylnaphthalene	0.41	0.62	0.48	0.38			0.54	0.27			1.27	0.55	1.22	4.30			5.14	
acenaphthylene	0.49	1.41	0.18	0.56			0.83	0.49			2.26	2.65	3.73	6.30			1.49	
acenaphthene	0.13	0.88	0.43				0.10	0.30			0.18	1.20	1.55	4.10	0.08		5.08	
1,6,7-trimethylnaphthalene	0.25	0.61					0.11	0.17			0.34	0.96	1.15	2.75			1.89	
fluorene	0.63	1.13	0.31	0.91	0.02	2.28	0.17	0.26			0.27	0.91	0.79	0.29	0.19	0.33	4.04	
phenanthrene	0.35	0.53			0.56	0.07	0.64	0.09			1.03	1.11	1.54	1.12			0.35	
anthracene	1.33	0.54					0.11	0.16			0.41	3.48	0.27	1.34	1.25		1.89	
1-methylphenanthrene	0.35	0.53					0.08	0.11			0.49	0.45	0.71	0.62	0.09	0.07	0.62	
fluoranthene	0.04	0.99	0.40	0.62	0.42	1.05	0.10	0.11			0.21	0.87	0.95	0.78	0.04	0.23	0.84	
pyrene	0.03	1.10	0.37	0.59	0.39	0.27	0.15	0.30			0.41	0.84	0.70	1.30	0.23	0.37	0.64	
benz[a]anthracene	0.33	0.99	0.51	0.60			0.09	0.20			0.21	0.42	0.67	0.85			0.74	
chrysene	0.32	0.69																
triphenylene																		
benzo[b]fluoranthene	0.41	0.57					0.12	0.26			1.84	2.09	1.56	1.92	1.25	1.28	0.97	
benzo[k]fluoranthene											1.34	1.48						
benzo[e]pyrene	0.57	0.84	0.37	0.90	3.07	1.50	0.26	0.22					1.85	0.74	0.81	0.09	3.35	
benzo[a]pyrene	0.37	0.66	0.31	0.97	1.94	1.68	0.07	0.13			1.43	1.55	1.62	0.92			0.13	
benzo[a]pyrene	0.54	0.81	0.66	1.02		2.06	0.45	0.09			1.99	1.14	3.63	1.99			0.41	
perylene	0.64	1.13	0.16	0.63			0.35	0.10			2.25	2.41	4.18	1.99			0.94	
indeno[1,2,3-cd]pyrene	0.20	1.28	0.43	0.72			0.39	0.07			2.86	3.38	4.22	2.76			0.76	
1,2,3,4-tetrahydronaphthalene	0.26	0.33	0.36	0.86			0.61	0.07			3.49	4.27	2.15	4.21			0.00	
benzo[a]anthracene							0.29	0.14			1.93	1.61	4.01	2.17			0.75	
benzo[ghi]perylene	0.44	0.82	2.91	3.37														

Table 21. p scores (15%) for Pesticides in Mussel Tissue XI and SRM 1974b

Laboratory No.	1a QA03TIS11	1a 1974b	1b QA03TIS11	1b 1974b	1c QA03TIS11	1c 1974b	2 QA03TIS11	2 1974b	4 QA03TIS11	4 1974b	7 QA03TIS11	7 1974b	8 QA03TIS11	8 1974b	9 QA03TIS11	9 1974b	9 rev QA03TIS11	9 rev 1974b
alpha-HCH (a-BHC)																		
hexachlorobenzene																		
gamma-HCH (g-BHC,lindane)																		
beta-HCH (b-BHC)																		
heptachlor					1.31	0.36												
aldrin																		
heptachlor epoxide					1.16	0.69												
oxychlorodane					0.54	0.19												
gamma-chlordane					1.20	0.34												
2,4'-DDE	0.04	0.21	0.07	0.19					3.25	0.77	1.02	0.06	0.30	2.30	0.79	0.65	1.09	0.76
endosulfan I																		
cis-chlordane (alpha-chlordane)	0.11	0.28	0.06	0.18	0.47	0.32			4.20	0.99	0.44	0.31	0.40	0.27	0.55	1.16	0.70	1.17
trans-nonachlor	0.23	0.25	0.09	0.16	0.90	0.83			1.71	1.29	0.44	0.09	0.35	0.27	0.22	1.46	0.39	1.67
dieldrin	0.08	0.07			0.10	0.14				4.70					1.99	0.51	1.92	0.56
4,4'-DDE	0.12	0.27	0.05	0.26	0.54	0.38			0.70	0.38	0.22	0.03	0.26	0.15	0.73	0.44	0.70	0.59
2,4'-DDD	0.07	0.22	0.17	0.10	0.31	0.35				2.26	0.10	0.17	0.32	2.34				
endrin																		
endosulfan II																		
4,4'-DDD	0.14	0.14			0.41	0.33			3.01		0.25	0.15	0.28	3.05	1.52	1.63	1.65	1.82
2,4'-DDT	0.10	0.05	0.20	0.32	0.30	0.43				2.56								
cis-nonachlor	0.10	0.08	0.33	0.14	1.93	0.80									2.67	0.64	2.61	0.60
4,4'-DDT	0.04	0.17	0.36		0.31	2.78				3.87					1.54	2.24	1.73	2.44
nirex																		
endosulfan sulfate																		
chlorpyrifos																		

*Lab 9 rev values are calculated on a wet mass basis as requested. The original submission (Lab 9) was calculated on a dry mass basis.

Table 21 (cont.) p scores (15%) for Pesticides in Mussel Tissue X1 and SRM 1974b

Laboratory No.	11	11	12	12	14	14	15	15	16	17	17	18	18	19	19	20	20
	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11
alpha-HCH (a-BHC)	1.02	1.50			1.50	0.36			0.27	0.20	0.72			2.13	1.47	2.50	3.87
hexachlorobenzene	1.04	2.37			0.83	4.92			2.90	0.86	1.15					0.49	1.69
gamma-HCH (g-BHC, lindane)	1.36	4.89							0.43	0.69	2.22					1.07	0.21
beta-HCH (b-BHC)	4.43	7.63			3.24	0.33		0.12	0.44	0.71				1.44	0.48		2.20
heptachlor	0.64	0.18			2.48	1.46			0.07	4.74							
aldrin	0.69	1.72							0.60	0.44				2.12	1.15		
heptachlor epoxide																	
oxychlorodane	0.51	0.76			1.40	4.68		0.13	0.39	1.18	0.22		0.98			0.07	0.05
gamma-chlordane	0.49	0.96			0.59	0.53							0.66			1.04	0.52
2,4'-DDE	1.20	0.72			2.71	1.39							1.68			0.41	0.16
endosulfan I													2.50				
cis-chlordane (alpha-chlordane)	0.32	0.81			0.99	0.68		0.10	0.52	1.22	0.23		1.53	0.45	0.36	1.04	0.16
trans-nonachlor	0.26	0.78			1.26	0.75		0.19	0.48	0.75	0.21		0.52	0.76	0.27	0.99	0.45
dieldrin	0.74	0.99							1.39	1.20			1.68			0.56	0.26
4,4'-DDE	0.37	0.58			0.10	0.10		0.08	0.36	0.71	0.22		0.71	0.33	0.28	0.88	0.33
2,4'-DDD	0.34	0.65			0.26	0.91		0.59	0.32	0.92	0.34		2.80	0.19	0.81	0.22	0.40
endrin	0.73	1.55			2.60	2.28											
endosulfan II	0.39	0.69															
4,4'-DDD	0.50	0.82			0.68	1.10		0.19	0.17	0.84	0.22		1.26	0.26	1.90	0.73	0.74
2,4'-DDT	0.68	0.87			0.16	1.01								0.07	0.51	1.18	0.64
cis-nonachlor	0.45	0.74			1.49	1.30		0.06	1.59	1.97			0.97			1.17	0.30
4,4'-DDT	0.62	0.71			0.61	4.50		0.66	0.97	1.20	0.28			0.31	3.24	0.70	1.56
nitrex	0.81	0.26							1.28	1.62						0.96	1.14
endosulfan sulfate																	
chlorpyrifos	0.24	1.28															

Table 22. p scores (15%) for PCBs in Mussel Tissue XI and SRM 1974b

Laboratory No.	1a	1a	1b	1b	1c	1c	2	2	4	4	7	7	8	8	9	9	9 rev	9 rev
	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b
PCB 8	0.08	0.15	0.23	0.21	1.29	0.58					1.07	0.72	0.14	0.28	2.17	2.21	2.36	2.15
PCB 18	0.06	0.17	0.10	0.15	0.31	0.31					0.09	0.71	0.13	0.10	0.66	1.25	0.75	1.14
PCB 28	0.15	0.13	0.10	0.07	0.10	0.15	0.98	1.35			0.20	0.11	0.13	0.10	0.22	1.20	0.36	1.40
PCB 31	0.22	0.26	0.03	0.15	0.43	0.45	1.11	1.28			0.23	0.22	0.17	0.25	0.43	0.35	0.58	0.54
PCB 44	0.17	0.19	0.10	0.08	0.20	0.29	0.52	0.67			0.26	0.24	0.17	0.25	1.64	0.59	1.51	0.68
PCB 49	0.04	0.07	0.15	0.08	0.23	0.23	0.56	1.07			0.25	0.25	0.11	0.12	1.53	1.19	1.72	1.06
PCB 52	0.12	0.05	0.05	0.07	0.20	0.21	0.69	0.67			0.13	0.29	0.15	0.13	2.07	1.69	2.18	1.87
PCB 66	0.04	0.07	0.06	0.06	0.19	0.13	0.04	1.00			0.17	0.20	0.15	0.13	1.69	2.04	1.77	2.17
PCB 95	0.18	0.06	0.10	0.08	0.23	0.18	0.96	0.83			0.30	0.26	0.15	0.13	0.77	0.59	1.32	0.77
PCB 99	0.23	0.07	0.03	0.05	0.21	0.21	0.43	0.87			0.30	0.30	0.13	0.11	1.16	0.90	1.32	1.10
PCB 101	0.05	0.25	0.03	0.04	0.15	0.22	0.20	1.25			0.11	0.41	0.13	0.11	0.52	0.66	0.60	0.84
PCB 105	0.13	0.21	0.05	0.04	0.19	0.28	0.60	1.56			0.33	0.26	0.27	0.16	1.30	0.98	1.17	1.18
PCB 118	0.06	0.25	0.06	0.04	0.08	0.32	1.49	3.92			0.21	0.32	0.15	0.18	0.84	0.86	0.94	1.03
PCB 128	0.17	0.09	0.13	0.02	0.25	0.34	1.23	2.24			0.33	0.46	0.27	0.20	0.82	0.77	0.73	0.78
PCB 138	0.06	0.02	0.05	0.03	0.08	0.37	0.44	0.82			0.27	0.44	0.29	0.22	0.57	0.91	0.69	1.09
PCB 149	0.11	0.05	0.09	0.12	0.28	0.31	1.23	2.24			0.19	0.33	0.05	0.03	0.73	0.72	0.88	0.92
PCB 153	0.07	0.21	0.04	0.05	0.16	0.29	0.48	0.84			0.24	0.39	0.05	0.03	0.68	0.98	0.83	1.18
PCB 156	0.06	0.29	0.10	0.08	0.28	0.43	0.00	0.25			0.13	0.48	0.07	0.03	0.57	0.60	0.61	0.43
PCB 170	0.12	0.17	0.36	0.67	0.34	0.39	0.23	0.98			0.26	0.66	0.07	0.32	3.16	0.67	3.34	0.61
PCB 180	0.04	0.12	0.09	0.03	0.22	0.36					0.22	0.35	0.14	0.84	1.00	0.95	0.87	0.86
PCB 187															1.34	1.53	1.40	1.64
PCB 194	0.15	0.05	0.11	0.03											1.52			1.51

*Lab 9 rev values are calculated on a wet mass basis as requested. The original submission (Lab 9) was calculated on a dry mass basis.

Table 22 (cont). p scores (15%) for PCBs in Mussel Tissue XI and SRM 1974b

Laboratory No.	11	11	12	14	15	16	17	18	19	20
	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b	QA03TIS11	1974b
PCB 8	2.25	1.84				0.22	1.14		1.32	1.60
PCB 18	0.39	0.74			0.10	0.59	0.20	1.07	0.32	0.73
PCB 28	0.45	0.75			0.22	1.09	0.15	0.35	0.90	0.34
PCB 31	0.33	0.58			0.82	0.11			0.80	0.39
PCB 44	0.33	0.68			0.12	0.56			0.55	0.34
PCB 49	0.42	0.84			0.07	0.61	0.17	0.68	0.45	0.47
PCB 52	0.37	0.74			0.08	0.71	0.07	0.73	0.02	0.63
PCB 66	0.45	0.66			0.37	0.89	0.21	0.70	0.25	0.61
PCB 95	0.32	0.69			0.10	0.21	0.35	0.66	0.21	0.79
PCB 99	0.35	0.68			0.07	1.05		0.75	0.24	0.18
PCB 101	0.32	0.70			0.10	0.19		0.64		0.23
PCB 105	0.50	0.94			0.11	0.26		0.69	0.36	0.74
PCB 118	0.47	0.74			0.08	1.03	0.18	0.71	0.08	0.56
PCB 128	0.55	0.86			0.18	0.45	1.38	0.67	0.33	0.56
PCB 138	0.49	0.74			0.13	0.52	0.24	0.71	0.31	0.48
PCB 149	0.34	0.64			0.03	0.67	0.57	0.87	0.25	0.57
PCB 153	0.50	0.73			0.12	0.20	0.19	0.61	0.38	0.66
PCB 156	0.53	0.78			0.09	0.66	0.82	0.73	0.34	0.78
PCB 170	1.01	0.75			0.10	1.04	0.70	0.77	0.48	0.56
PCB 180	0.54	0.84			0.33	0.30	0.62	0.35	0.06	0.47
PCB 187	0.46	0.72			0.32	0.55	0.29	0.63	0.55	0.77
PCB 194	0.41	0.97			0.34	0.42	0.31	0.99	0.21	0.21
PCB 195	0.61	0.82				0.60	0.18	2.05	0.05	1.00
PCB 206	0.87	0.54				1.33	0.31	0.46	0.41	0.86
PCB 209	0.82	0.96				4.06		0.64	0.08	1.03
						2.56				0.01
						2.52				1.14
						3.43				

Table 23. p scores (15%) for water, TOC, and PAHs in Marine Sediment XII and SRM 1941b

Laboratory No.	1a		1b		1c		2		3		4		5		6		7	
	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941a	QA03SED12	1941b	QA03SED12	1944	QA03SED12	1944	QA03SED12	1941b
Water	0.01				0.06	0.13	0.07		0.08		0.40		0.00		0.04		0.06	
TOC	0.14	0.06	0.04	0.09	0.18	0.17	0.82	0.47	0.80		1.82	0.49	0.50	0.48	1.09	0.23	0.12	0.79
naphthalene	0.07	0.28	0.26	0.18	0.55	0.30	0.60	0.50	1.71				0.36	0.33	1.05	0.25	0.10	0.07
2-methylnaphthalene	0.12	0.36	0.24	0.13	0.58	0.42	0.37	0.41	1.90				0.13	0.29	0.90	0.43	0.12	0.02
1-methylnaphthalene	0.16	0.19	0.13	0.06	0.31	0.33	0.40	0.52	2.44				0.30	0.28	1.51	0.29	0.15	0.07
biphenyl	0.09	0.18	0.29	0.13	0.48	0.31	0.42	0.60			0.37	0.76	0.32	1.55	1.37	0.55	0.15	0.14
2,6-dimethylnaphthalene	0.31	0.24	0.54	0.31	0.17	0.26	2.89	2.44	1.12		0.92	0.90	0.11	0.80	1.78	1.07	0.14	0.29
acenaphthylene	0.09	0.41	0.52	0.29	0.50	0.31	0.36	0.68	0.77		1.86	2.32	0.86	0.36	1.34	0.45	0.28	0.11
1,6,7-trimethylnaphthalene	0.14	0.31			0.30	0.19	0.36	1.62					0.80	0.57				
fluorene	0.07	0.28	1.03	0.07	0.54	0.15	0.35	1.24	0.99		0.65	0.80	1.35	0.22	0.71	0.92	0.14	0.15
phenanthrene	0.09	0.15	0.46	0.15	0.36	0.03	0.14	0.69	0.87		0.59	0.92	0.29	0.16	1.09	0.07	0.11	0.11
anthracene	0.10	0.22	0.41	0.11	0.42	0.21	0.31	0.74	1.00		0.63	0.50	0.73	0.33	1.19	0.23	0.26	0.06
1-methylphenanthrene	0.06	0.06			0.44	0.22	0.78	0.30			2.31		1.42	0.43	0.93	0.37	0.18	0.46
fluoranthene	0.06	0.35	0.26	0.15	0.23	0.15	0.34	0.68	0.75		0.45	0.86	0.22	0.13	1.16	0.14	0.12	0.47
pyrene	0.08	0.12	0.22	0.15	0.32	0.11	0.42	0.68	0.65		0.44	0.90	0.74	1.29	0.99	0.12	0.06	0.48
benz[a]anthracene	0.07	0.20	0.28	0.16	0.42	0.03	0.40	0.78	0.56		0.25	0.81	0.86	0.27	0.80	0.44	0.12	0.36
chrysene	0.05	0.27	0.43	0.14	0.12	0.30	0.42	0.80	0.68		0.57	0.87	0.27	0.46	1.20	0.50	0.30	0.14
triphenylene	0.40	0.16	0.14	0.14					0.79									
benzo[b]fluoranthene	0.12	0.10	0.10	0.36	0.19	0.15	0.41	1.15	0.45		0.53	1.05	0.44	0.50	1.67	0.77	0.19	0.55
benzo[k]fluoranthene	0.20	0.05	0.18	0.37	0.18	0.32	2.82	2.13	0.37		0.82	1.35	0.85	0.98	0.79	0.62	0.37	0.36
benzo[k]fluoranthene	0.14	0.15	0.13	0.35	0.25	0.65	0.64	0.87	0.40				0.21	0.12	1.24	0.69	0.08	0.65
benzo[e]pyrene	0.14	0.14	0.12	0.32	0.17	0.14	0.62	0.80	0.35		0.50	0.76	0.75	1.50	0.97	0.67	0.31	0.52
benzo[a]pyrene	0.06	0.09	0.18	0.22	0.44	0.40	0.50	1.04	0.69		0.25	0.76	0.49	0.39	1.95	0.78	1.65	0.42
perylene	0.25	0.16	0.10	0.20			0.36	1.36	0.74		0.76	0.41	0.03	0.26	0.94	0.35	0.21	0.17
indeno[1,2,3-cd]pyrene	0.09	0.15	0.41	1.17	0.26	0.59	0.70	1.96	0.92		0.69	1.08	0.44	0.46	0.95	0.32	2.67	2.43
dbenz[a,h]anthracene	0.25	0.08	0.92	0.21	0.38	0.77	0.48	1.51	0.49				0.23	0.25	1.12	0.27	0.59	0.16
benzo[ghi]perylene	0.07	0.11	0.13	0.29	0.32	0.38												

Table 23 (cont). p scores (15%) for water, TOC, and PAHs in Marine Sediment XII and SRM 1941b.

Laboratory No.	9		10		11		12		13		14		15		16		17	
	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b
Water	0.11	0.73	0.05	0.05	0.10	0.18	0.09	0.09	0.09	0.09	0.01	0.01	0.06	0.01	0.02	0.02	0.21	0.21
TOC	0.44	0.18	0.68	0.13	0.81	0.15	0.41	0.13	0.13	0.13	0.48	0.48	0.31	0.15	0.31	0.15	0.29	0.53
naphthalene	3.09	4.92	1.96	0.29	0.21	1.05	0.78	0.10	0.53	0.53	0.76	0.76	0.50	0.14	0.50	0.14	0.33	0.34
2-methylnaphthalene	3.20	4.27	1.96	0.29	0.10	1.05	0.78	0.10	0.53	0.53	0.76	0.76	0.27	0.12	0.27	0.12	1.58	0.96
1-methylnaphthalene	2.61	3.98			0.05	0.93	0.99	0.77	0.89	0.89	0.67	0.67	0.24	0.05	0.24	0.05	1.81	0.66
biphenyl	1.60	3.43			0.84	0.57	0.64	0.89	0.64	0.64	0.71	0.71	0.25	0.03	0.25	0.03	1.12	0.70
2,6-dimethylnaphthalene	2.18	2.59			0.76	0.42	0.14	0.47	0.14	0.14	0.71	0.71	0.38	0.14	0.38	0.14	4.30	3.13
acenaphthylene	0.55	1.52	0.41	0.63	0.39	0.41	0.20	0.80	0.80	0.77	0.81	0.81	0.54	0.04	0.54	0.04	0.98	0.68
acenaphthene	1.30	2.80	0.95	0.54	0.94	0.57	0.94	0.77	4.80	4.80	0.81	0.81	0.32	0.08	0.32	0.08	0.70	0.25
1,6,7-trimethylnaphthalene					0.82	1.26							1.20	0.09	1.20	0.09	0.84	0.58
fluorene	1.04	1.80	1.10	0.52	1.14	0.21	0.63	0.38	4.07	4.07	1.20	1.20	0.68	0.12	0.68	0.12	0.68	1.56
phenanthrene	0.89	1.15	0.79	0.32	0.30	0.25	0.27	0.45	1.12	1.12	0.26	0.26	0.41	0.07	0.41	0.07	1.47	0.19
anthracene	0.89	1.72	2.06	0.31	0.29	0.13	0.17	0.68	2.43	2.43	1.56	1.56	0.37	0.11	0.37	0.11	1.51	1.65
1-methylphenanthrene	0.95	0.69			0.34	0.78			0.85	0.44			0.25	0.11	0.25	0.11	1.48	2.01
fluoranthene	0.56	0.97	0.58	0.25	0.29	0.65	0.22	0.66	0.25	0.66	1.36	1.36	0.47	0.11	0.47	0.11	1.77	2.11
pyrene	0.58	0.97	0.62	0.22	0.34	0.57	0.23	0.57	0.08	0.57	0.88	0.88	0.40	0.12	0.40	0.12	1.38	1.90
benz[a]anthracene	0.57	1.17	1.06	0.29	0.17	0.21	0.19	1.34	0.86	1.34	1.90	1.90	0.46	0.17	0.46	0.17	1.31	1.97
chrysene	0.40	0.94	0.68	0.24	0.34	1.03			0.30	0.57			0.52	0.24	0.52	0.24	1.36	1.66
triphenylene																	1.08	1.37
benzo[b]fluoranthene	0.49	1.67	0.53	0.36	0.69	0.24			1.41	0.79			0.40	0.18	0.40	0.18	0.84	1.40
benzo[k]fluoranthene																	1.29	1.66
benzo[e]pyrene	0.29	0.94	0.81	0.49	0.48	0.84	0.18	1.23	0.91	1.23	0.82	0.82	0.42	0.12	0.42	0.12	0.98	1.14
benzo[a]pyrene	0.35	1.18			0.62	0.69	0.16	0.53	0.70	0.53	4.26	4.26	0.48	0.17	0.48	0.17	1.24	1.06
perylene	0.25	1.30	1.16	0.34	0.59	0.70	0.10	0.78	1.41	0.78	0.59	0.59	0.35	0.07	0.35	0.07	0.67	0.97
indeno[1,2,3-cd]pyrene	5.31	1.41			0.37	1.07	0.19	0.82	0.71	0.82	0.79	0.79	0.37	0.09	0.37	0.09	0.41	0.99
indeno[1,2,3-cd]pyrene	0.30	1.10	0.63	0.43	0.43	0.72	0.15	1.71	2.43	1.71			0.11	0.15	0.11	0.15		
dibenz[a,h]anthracene	0.46	1.07	3.83	0.67	0.47	0.84	0.82	0.43	3.35	0.43	1.33	1.33	0.33	0.18	0.33	0.18		
benzo[ghi]perylene	0.35	2.76	0.63	0.32	0.38	0.74	1.45	0.80	1.54	0.80								

Table 23 (cont). p scores (15%) for water, TOC, and PAHs in Marine Sediment XII and SRM 1941b

Laboratory No.	18 QA03SED12	18 1944	19 QA03SED12	19 1941b	20 QA03SED12	20 1941b
Water	0.53		0.09		0.23	
TOC	1.74	0.67				
naphthalene	0.47	0.38	1.95	0.75	0.56	
2-methylnaphthalene	0.37	0.23	2.02	0.68	0.34	
1-methylnaphthalene	0.43	0.15	1.89	0.80	0.25	
biphenyl	0.73	0.30	2.12	1.31	0.44	
2,6-dimethylnaphthalene	0.91	0.41	1.30	1.06	0.07	
acenaphthylene	2.35	1.40	2.04	1.08	0.74	
acenaphthene	1.51	0.75	2.19	1.50	0.02	
1,6,7-trimethylnaphthalene	2.77	1.13	0.84	0.17	0.22	
fluorene	2.65	0.95	1.81	0.07	1.26	
phenanthrene	0.55	0.12	0.49	0.59	0.22	
anthracene	0.66	0.27	1.45	0.16	0.88	
1-methylphenanthrene	0.72	0.37	0.71	0.18	1.06	
fluoranthene	0.56	0.31	0.03	0.52	0.35	
pyrene	0.54	0.06	0.23	0.25	0.09	
benz[a]anthracene	0.51	0.09	0.54	0.31	0.39	
chrysene	0.29	0.05			1.26	
triphenylene						
benzo[b]fluoranthene	0.48	0.44	0.85	0.80	1.27	
benzo[j]fluoranthene						
benzo[k]fluoranthene	0.29	0.19			0.54	
benzo[e]pyrene	0.21	0.13	0.58	0.34	0.79	
benzo[a]pyrene	0.59	0.12	0.68	0.44	0.51	
perylene	0.50	0.10	0.68	1.41	0.41	
indeno[1,2,3-cd]pyrene	0.39	0.31	0.28	0.39	0.61	
dibenz[a,h]anthracene	0.45	0.15			0.55	
benzo[ghi]perylene	0.43	0.35	0.89	3.77	0.56	

Table 24. p scores (15%) for Pesticides in Marine Sediment XII and SRM 1941b

Laboratory No.	1a		1b		1c		2		3		4		5		6		7	
	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941a	QA03SED12	1941b	QA03SED12	1944	QA03SED12	1944	QA03SED12	1941b
alpha-HCH (a-BHC)	0.19	0.11	0.29	0.01	0.98							3.09		0.71				0.37
hexachlorobenzene																		
gamma-HCH (γ-BHC,lindane)																		
beta-HCH (β-BHC)																		
heptachlor																		
aldrin																		
heptachlor epoxide																		
oxychlorodane																		
gamma-chlordane	0.74	0.16			0.41						1.89		0.47					0.64
2,4'-DDE					0.19								0.65					
endosulfan I																		
cis-chlordane (alpha-chlordane)	0.52	0.13			0.31								0.53					0.54
trans-nonachlor	0.27	0.18			0.36								0.65					
dieldrin	0.15				0.54								1.71					
4,4'-DDE	0.07	0.20		0.14	0.03								0.36				0.10	0.16
2,4'-DDD	0.04			0.16	0.58								1.08				0.06	
endrin																		
endosulfan II																		
4,4'-DDD	0.13	0.18			0.11							0.96	1.09	0.43			0.08	0.15
2,4'-DDT	0.07			0.29	0.14							0.22	2.58	0.63			0.41	
cis-nonachlor	0.15																	
4,4'-DDT	0.32	0.32		0.42	0.09							0.95	1.72	0.46			0.52	
mirex																		
endosulfan sulfate																		
chlorpyrifos																		

Table 24 (cont.) p scores (15%) for Pesticides in Marine Sediment XII and SRM 1941b

Laboratory No.	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17
	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b
alpha-HCH (a-BHC)	2.02				2.64	1.43			1.40	9.81					0.09	1.28		
hexachlorobenzene	2.59	2.26			1.58	0.60		0.12			0.90				1.55	0.15		
gamma-HCH (γ-BHC, lindane)											1.76				1.63	0.48		
beta-HCH (β-BHC)					1.89	0.33			2.55		2.02				0.68	0.71		
heptachlor					2.25	1.22					3.00				0.57	1.87		
aldrin						1.18									7.64	1.89		
heptachlor epoxide					1.40										2.85	0.98		
oxychlordane																		
gamma-chlordane	1.01	2.43			0.66	1.15		0.08			3.70				0.95	0.80		
2,4'-DDE						1.18					0.56				0.36	0.34		
endosulfan I											0.06							
cis-chlordane (alpha-chlordane)	2.14	4.38			1.17	0.29		0.02			2.63				2.02	1.05		
trans-nonachlor						2.34		1.66			1.51				3.33	0.79		
dieldrin	0.79	3.43			1.31	1.05									2.19	0.51		
4,4'-DDE	0.66	0.04			0.84	0.96		0.08			0.91				0.25	0.37		
2,4'-DDD					0.98	0.71			5.31	5.19	0.15				0.32	0.33		
endrin					2.21	1.40					2.52							
endosulfan II					0.72	2.52												
4,4'-DDD	2.64	2.80			1.36	0.68			2.44	5.42	0.25				0.71	0.32		
2,4'-DDT									2.13		1.32				0.32			
cis-nonachlor	1.10	6.49			0.74	1.05					0.44							
4,4'-DDT	1.10	1.80			1.01	0.26			3.50	2.85	0.60				0.77	1.24		
mixe					0.99	0.47				5.77					1.04	0.51		
endosulfan sulfate															0.15			
chlorpyrifos															0.75			
															2.43	0.83		
																	4.85	
																		0.52
																		0.77
																		2.16
																		0.72
																		2.81
																		1.11
																		1.27
																		4.85
																		1.04
																		1.04
																		1.04
																		1.36

Table 24 (cont). p scores (15%) for Pesticides in Marine Sediment XII and SRM 1941b

Laboratory No.	18 QA03SED12	18 1944	19 QA03SED12	19 1941b	20 QA03SED12	20 1941b
alpha-HCH (a-BHC)	0.74	0.55	0.94	1.43	0.26	
hexachlorobenzene			1.05	0.62		
gamma-HCH (g-BHC, lindane)						
beta-HCH (b-BHC)			2.23	1.67		
heptachlor			1.75	4.69		
aldrin			2.90	4.11		
heptachlor epoxide					2.40	
oxychlorodane					0.70	
gamma-chlordane	0.28	0.50			1.24	
2,4'-DDE		0.36			0.80	
endosulfan I			1.82	0.92		
cis-chlordane (alpha-chlordane)		0.55	0.84	2.68	1.37	
trans-nonachlor	1.32	0.69	1.90	1.08	1.10	
dieltrin					0.75	
4,4'-DDE	0.06	0.62	0.15	1.39	0.93	
2,4'-DDD	0.37	0.24			1.02	
endrin						
endosulfan II						
4,4'-DDD	0.43	1.65	0.60	1.71	1.64	
2,4'-DDT	0.53		0.73		0.94	
cis-nonachlor		0.72			0.76	
4,4'-DDT	0.07	3.34	0.53	1.68	1.87	
mirex			3.25	3.05		
endosulfan sulfate			1.61	1.04		
chlorpyrifos			0.53	1.14		

Table 25. p scores (15%) for PCBs in Marine Sediment XII and SRM 1941b

Laboratory No.	1a		1b		1c		2		3		4		5		6		7	
	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941a	QA03SED12	1941b	QA03SED12	1944	QA03SED12	1944	QA03SED12	1941b
PCB 8	0.08	0.32	0.23	0.05	0.88	1.37	2.92	0.34						0.56			0.81	0.68
PCB 18	0.15	0.18	0.62	0.06	0.87	0.70	0.72	0.70					1.02	0.39			0.54	0.58
PCB 28	0.10	0.17	0.32	0.07	0.50	0.46	1.09	0.88					1.08	0.36			0.76	0.68
PCB 31	0.07	0.23	0.22	0.15	0.40	0.44	1.37	0.07					1.15	0.43			0.67	0.72
PCB 44	0.10	0.14	0.48	0.05	0.21	0.16	0.95	0.59					1.02	0.41			0.64	0.82
PCB 49	0.13	0.18	0.37	0.24	0.76	0.08	1.08	0.70					0.58	0.41			0.64	0.71
PCB 52	0.17	0.09	0.43	0.10	0.40	0.03	0.90	0.34					1.02	0.41			0.55	0.72
PCB 66	0.07	0.12	0.32	0.07	1.05	0.23	0.89	0.76					0.34	0.38			0.80	0.79
PCB 95	0.09	0.19	0.22	0.26	0.19	0.09	0.86	0.46					0.73	0.48			0.65	0.95
PCB 99	0.19	0.19	0.30	0.13	0.61	0.61	1.05	0.31					0.29	0.41			0.81	0.82
PCB 101	0.15	0.11	0.22	0.12	0.25	0.44	1.06	0.08					0.24	0.41			0.89	0.73
PCB 105	0.04	0.24	0.37	0.20	0.40	0.78	1.19	0.32					0.35	0.41			1.07	0.56
PCB 118	0.20	0.09	0.27	0.05	0.34	0.18	1.03						0.29	0.41			0.90	0.89
PCB 128	0.07	0.12	0.21	0.20	0.48	1.18	0.99	1.25					0.24	0.41			0.87	0.95
PCB 138	0.10	0.29	0.24	0.11	0.09	0.11	0.89	0.28					0.20	0.39			0.92	0.73
PCB 149	0.32	0.10	0.24	0.04	0.29	0.09	1.14	0.22					0.03	0.65			0.79	0.81
PCB 153	0.05	0.20	0.26	0.04	0.44	0.25	1.15	0.99					0.11	0.74			0.84	0.71
PCB 156	0.76	0.11	0.31	0.48	0.58	0.45	1.32	0.44					0.03	0.65			0.96	0.73
PCB 170	0.05	0.21	0.41	0.07	0.77	0.11	1.32	0.44					0.19	0.57			0.94	0.75
PCB 180	0.25	0.17	0.50	0.01	0.54	0.01	1.17	0.13					0.11	0.74			0.99	0.69
PCB 187	0.07	0.28	0.48	0.03	0.41	0.01	1.23	0.19					0.20	0.39			0.82	0.55
PCB 194	0.16	0.09	0.65	0.51	0.70	0.31	1.38	0.47					0.63	0.66			1.25	0.81
PCB 195	0.27		0.77	0.06	0.62	0.19	1.37	1.08					0.20	0.39			0.74	1.32
PCB 206	0.18		0.72	0.06	1.36	0.19	1.04						0.63	0.66			0.97	0.59
PCB 209	0.24	0.12	0.62	0.06	1.90	0.03	1.68	0.73					0.43	0.25			0.59	0.79

Table 25 (cont). p scores (15%) for PCBs in Marine Sediment XII and SRM 1941b

Laboratory No.	9		10		11		12		13		14		15		16		17	
	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b	QA03SED12	1941b
PCB 8	1.54	4.83			1.18	1.16			5.42	5.42	2.40		0.90	0.10	1.99	0.69	3.02	4.33
PCB 18	1.47	0.64			0.87	0.89		0.63	5.55	5.55	0.71		0.22	0.23	2.76	0.21	1.78	1.45
PCB 28	0.41	2.43			0.79	0.61			5.31	5.31			0.72	0.15	2.07	0.20	1.44	1.46
PCB 31	1.64	2.56			0.85	0.85			4.65	4.65			0.54	0.10	2.11	0.47		
PCB 44	0.88	4.03			1.87	0.62		0.27	4.88	4.88	0.41		0.43	0.07	2.14	0.23	1.04	1.70
PCB 49	1.70	1.09			0.68	0.62		0.14	4.65	4.65	0.44		0.57	0.11	3.01	0.29	1.46	1.57
PCB 52	0.82	1.72			1.38	0.84		0.31	5.08	5.08	0.51		0.36	0.07	2.25	1.37	0.94	1.44
PCB 66	0.80	1.54			0.74	0.60			4.75	5.32	1.32		0.58	0.25	1.50	0.35	1.41	1.21
PCB 95	0.60	2.34			0.37	0.71			1.68	5.02	0.39		0.37	0.05	2.34	0.99		
PCB 99	0.35	1.97			1.35	0.44		0.37	2.86	4.96	0.48		0.56	0.20	2.50	1.01	0.93	2.38
PCB 101	0.35	1.74			0.50	0.62		0.38	1.75	4.57	0.56		0.45	0.20	4.92	3.35	1.07	3.32
PCB 105	0.50	1.55			1.68	0.90			3.14	4.59	0.48		0.45	0.20	2.19	0.40	0.88	3.17
PCB 118	0.32	3.06			0.20	0.63			3.11	4.29	0.48		0.42	0.22	2.14	0.34	0.97	5.55
PCB 128	1.09	0.71			0.83	1.91			2.73	4.37	0.69		0.54	0.17	2.16	0.46	1.17	2.78
PCB 138	0.64	1.25			0.09	0.38			2.95	4.22	0.65		0.58	0.15	2.09	0.63		
PCB 149	0.85	2.65			0.39	0.52			3.16	4.44			0.54	0.12	2.03	1.72		
PCB 153	0.49	1.21			0.23	0.48			1.97	4.50			0.53	0.11	1.92	0.41	1.24	1.70
PCB 156	0.85	0.61			0.80	0.68		0.32	4.09	4.09			0.47	0.15	1.87	0.65		
PCB 170	0.91	0.74			0.70	0.68			1.75	4.58			0.47	0.34	1.62	1.68	0.92	0.52
PCB 180	0.69	1.83			1.22	0.36		0.15	1.86	4.74	1.29		0.76	0.06	0.36	0.37	1.18	1.43
PCB 187	1.48	2.58			0.63	0.98			2.61	4.46			0.66	0.06	0.96	0.69	1.13	0.67
PCB 194	0.60	1.31			1.23	1.50		0.13	1.72	4.73	1.58		0.62	0.51	1.14	0.09	0.96	2.03
PCB 195	0.25	3.64			1.17	1.98		0.09	3.41	4.63			0.37	0.48	1.12	0.34	3.65	0.71
PCB 206	1.32	0.94			0.96	1.11		0.12			1.27		0.06	0.03	1.15	0.43		
PCB 209	1.14	1.73			1.41	1.02					1.41		0.16		2.06	0.16	3.14	3.86

Table 25 (cont). p scores (15%) for PCBs in Marine Sediment XII and SRM 1941b

Laboratory No.	18		19		20	
	QA03SED12	18 1944	QA03SED12	19 1941b	QA03SED12	20 1941b
PCB 8		1.45	1.75	0.65	0.53	
PCB 18	0.52	0.56	0.56	1.00	0.74	
PCB 28	0.37	0.81	1.77	0.63	0.51	
PCB 31					0.84	
PCB 44	0.63	0.55	0.88	0.31	0.38	
PCB 49	0.59	0.60			0.56	
PCB 52	0.87	0.73	0.02	0.09	0.36	
PCB 66	0.69	0.99	0.30	1.50	0.62	
PCB 95	0.85	0.85			0.71	
PCB 99	0.89	0.66			0.30	
PCB 101	0.80	0.80	0.63	0.15	0.17	
PCB 105	0.68	0.70	0.57	0.51	0.69	
PCB 118	0.76	0.72	0.58	0.43	0.32	
PCB 128	2.01	0.92	0.80	0.66	0.69	
PCB 138	0.88	0.63	0.47	0.59	0.31	
PCB 149	0.87	0.71			0.39	
PCB 153	0.80	0.69	0.32	0.37	0.45	
PCB 156	1.07	1.29			0.47	
PCB 170	0.92	0.76	0.25	0.64	1.84	
PCB 180	0.82	0.34	0.42	0.56	0.64	
PCB 187	1.03	0.43	0.19	1.97	0.61	
PCB 194	0.16	0.69			0.92	
PCB 195	1.64	1.34	0.51	0.55	0.84	
PCB 206	0.63	0.45	0.18	0.44	0.80	
PCB 209	0.99	0.71	1.20	0.77	1.48	

Table 26. Comparison to Previous Exercise Assigned Values for the PAHs (ng/g dry basis)

PAHs	Mussel Tissue			Marine Sediment	
	QA92TIS4	QA98TIS9	QA03TIS11	QA98SED8	QA03SED12
	14 labs	20 labs	20 labs	29 labs	20 labs
naphthalene	25.1 (5.7)	25.7 (6.2)	24.4 (9.5)	107 (29)	117 (39)
2-methylnaphthalene	40.5 (10.3)	33.1 (12.2)	25.2 (8.7)	77.4 (19.1)	80.6 (29.3)
1-methylnaphthalene	24.3 (4.8)	23.3 (8.5)	18.3 (9.6)	50.7 (13.2)	54.2 (16.5)
biphenyl	22.9 (14.5)	12.2 (1.0)	11.8 (3.8)	36.6 (12.9)	28.2 (9.3)
2,6-dimethylnaphthalene	65.8 (31.9)	38.8 (13.3)	30.8 (5.8)	51.2 (15.4)	39.7 (19.9)
acenaphthylene	8.69 (3.20)	7.87 (3.16)	6.49 (1.9)	50.2 (27.0)	52.0 (34.5)
acenaphthene	9.07 (1.59)	9.46 (1.42)	11.7 (5.7)	38.2 (7.3)	37.1 (7.4)
1,6,7-trimethylnaphthalene	41.8 (14.6)	31.3 (13.6)	27.8 (9.3)	27.2 (8.9)	28.6 (6.6)
fluorene	22.2 (4.6)	21.4 (1.9)	25.2 (10.3)	67.9 (18.4)	62.6 (15.2)
phenanthrene	144 (25)	126 (22)	120 (15)	604 (127)	505 (100)
anthracene	17.5 (10.1)	11.3 (4.3)	10.4 (0.2)	183 (57)	147 (60)
1-methylphenanthrene	67.8 (7.4)	60.2 (13.6)	49.1 (9.6)	87.3 (23.3)	70.5 (15.2)
fluoranthene	395 (80)	322 (56)	313 (43)	1293 (374)	1070 (203)
pyrene	282 (48)	224 (63)	227 (30)	1367 (383)	1099 (216)
benz[a]anthracene	79.4 (16.3)	77.5 (15.3)	71.3 (13.9)	551 (109)	442 (105)
chrysene			142 (27)		640 (170)
triphenylene			69.4 (na)		144 (24)
chrysene+triphenylene	227 (52)	196 (44)	181 (31)	944 (246)	817 (185)
benzo[b]fluoranthene			81.3 (13.6)		999 (358)
benzo[j]fluoranthene			37.5 (11.5)		280 (4)
benzo[k]fluoranthene			38.1 (14.3)		392 (98)
benzo[b+j+k]fluoranthene	158 (26)	146 (31)		2110 (635)	
benzo[e]pyrene	114 (22)	99.5 (23.7)	98.8 (16.4)	805 (186)	657 (186)
benzo[a]pyrene	29.4 (5.7)	25.9 (3.5)	30.7 (11.9)	832 (210)	718 (238)
perylene	11.3 (3.0)	8.13 (1.58)	10.2 (2.9)	248 (52)	211 (60)
indeno[1,2,3-cd]pyrene	20.0 (7.1)	18.0 (4.4)	22.7 (9.3)	710 (219)	680 (214)
dibenz[a,h]anthracene			4.22 (1.52)		137 (66)
dibenz[a,h]+[a,c]anthracene	7.56 (6.89)	4.36 (2.53)	10.4 (na)	161 (43)	
benzo[ghi]perylene	26.0 (9.7)	21.2 (5.2)	24.3 (9.2)	683 (229)	608 (200)

Table 27. Comparison to Previous Exercise Assigned Values for the Pesticides (ng/g dry basis)

Pesticides	Mussel Tissue			Marine Sediment	
	QA92TIS4	QA98TIS9	QA03TIS11	QA98SED8	QA03SED12
	14 labs	20 labs	20 labs	29 labs	20 labs
alpha-HCH (a-BHC)		1.62 (0.81)	<10	<2	<2
hexachlorobenzene	0.43 (0.49)	1.08 (0.91)	<10	<3	0.315 (0.123)
gamma-HCH (g-BHC,lindane)	3.53 (4.24)	1.26 (0.86)	<10	<2	<3
beta-HCH (b-BHC)			<10	<2	<2
heptachlor	1.33 (1.54)	<5	2.92 (2.34)	<2	<2
aldrin	2.51 (2.30)	<3	<10	<2	<2
heptachlor epoxide	4.43 (5.10)	2.25 (0.33)	<10	<2	<2
oxychlordane		3.48 (1.73)	3.67 (na)	<2	<2
gamma-chlordane		12.3 (2.9)	13.2 (5.7)	1.65 (0.41)	0.753 (0.466)
2,4'-DDE	15.8 (12.9)	<5	2.51 (na)	<2	0.782 (0.299)
endosulfan I		<2	<10	<2	<2
cis-chlordane (alpha-chlordane)	16.3 (5.5)	14.7 (3.7)	13.3 (2.9)	1.76 (0.83)	0.639 (0.326)
trans-nonachlor	13.0 (4.2)	13.6 (2.1)	12.5 (3.1)	0.489 (0.259)	0.271 (0.144)
dieldrin	10.3 (7.5)	5.49 (1.27)	4.63 (0.56)	<2	0.978 (0.523)
4,4'-DDE	45.2 (4.2)	34.0 (8.0)	32.1 (6.2)	6.88 (2.00)	7.30 (3.28)
2,4'-DDD	11.3 (5.1)	11.5 (4.0)	10.3 (1.9)	7.15 (2.19)	6.93 (3.12)
endrin		<2	<10	<2	<2
endosulfan II		2.73 (0.54)	<10	<2	<2
4,4'-DDD	25.6 (9.7)	29.3 (7.6)	28.3 (10.9)	17.3 (6.3)	15.3 (2.8)
2,4'-DDT	6.31 (4.35)	7.51 (2.53)	8.02 (2.91)	5.14 (1.49)	5.09 (1.61)
cis-nonachlor		6.27 (1.93)	4.83 (2.01)	1.73 (1.01)	1.38 (0.79)
4,4'-DDT	10.3 (4.3)	9.30 (1.63)	10.1 (3.5)	19.4 (4.3)	18.6 (6.3)
mirex	1.32 (1.04)	1.75 (0.25)	<10	<2	<2
endosulfan sulfate			<10		<2
chlorpyrifos			<10		<2

Table 28. Comparison to Previous Exercise Assigned Values for the PCBs (ng/g dry basis) and water content (%)

PCBs and Water	Mussel Tissue			Marine Sediment	
	QA92TIS4	QA98TIS9	QA03TIS11	QA98SED8	QA03SED12
	14 labs	20 labs	20 labs	29 labs	20 labs
PCB 8	3.32 (2.37)	4.18 (2.32)	4.85 (2.91)	2.04 (1.51)	1.43 (0.77)
PCB 18	11.0 (5.4)	12.9 (4.5)	8.84 (2.06)	3.61 (1.42)	3.12 (1.01)
PCB 28	37.2 (16.8)	41.4 (9.6)	33.4 (4.6)	4.95 (1.68)	4.75 (1.19)
PCB 31			28.0 (4.5)		4.51 (1.41)
PCB 44	31.7 (11.9)	40.3 (8.7)	37.8 (21.8)	7.90 (3.04)	9.09 (2.30)
PCB 49			44.8 (10.3)		6.21 (1.91)
PCB 52	55.9 (11.2)	61.8 (10.8)	52.3 (8.1)	15.6 (6.3)	16.1 (4.6)
PCB 66		55.7 (13.8)	58.8 (9.1)	8.85 (3.51)	8.46 (2.22)
PCB 95		39.1 (9.9)	47.2 (7.8)	20.2 (7.7)	23.4 (10.1)
PCB 66/95	79.3 (22.1)	80.6 (23.5)		16.7(10.5)	
PCB 99			48.5 (8.8)		11.5 (5.3)
PCB 101	96.3 (15.0)	92.2 (20.1)	88.3 (9.6)	33.3 (13.6)	34.9 (11.7)
PCB 105	37.9 (7.0)	36.2 (7.7)	33.4 (4.8)	11.9 (3.9)	12.2 (4.5)
PCB 118	92.1 (16.5)	96.1 (20.7)	82.0 (7.0)	29.7 (11.9)	27.6 (10.0)
PCB 128	12.8 (3.3)	16.1 (4.5)	13.3 (2.3)	8.22 (3.20)	7.65 (2.50)
PCB 138			84.7 (18.8)		36.7 (11.3)
PCB 138/163/164	106 (18)	102 (25)		44.9 (17.5)	
PCB 149			54.1 (7.2)		26.6 (8.9)
PCB 153	114 (21)	113 (24)	102 (15)	50.6 (25.1)	41.5 (19.2)
PCB 156			5.79 (0.97)		4.43 (1.80)
PCB 170	1.90 (0.38)	3.01 (1.13)	1.98 (1.13)	12.6 (5.2)	9.11 (3.75)
PCB 180	9.16 (2.32)	15.5 (11.0)	7.95 (1.60)	21.7 (11.1)	19.1 (6.2)
PCB 187	24.3 (5.5)	27.5 (6.1)	22.8 (2.2)	11.5 (4.9)	10.8 (3.5)
PCB 194			<10		3.86 (2.16)
PCB 195	1.06 (1.03)	1.04 (0.55)	<10	2.61 (1.22)	1.79 (0.63)
PCB 206	4.23 (7.11)	<2	<10	3.30 (1.20)	2.57 (1.25)
PCB 209	0.84 (0.86)	<2	<10	2.33 (1.23)	1.62 (1.10)
% water	91.8 (0.3)	91.4 (1.0)	91.5 (0.9)		

Appendix A: Description, Storage, Use, and Reporting Instructions for Mussel Tissue XI (QA03TIS11)

NIST Intercomparison Exercise Program for
Organic Contaminants in the Marine Environment

NIST QA Program

Intercomparison Exercise: Mussel Tissue XI
Description of Materials and Instructions

Intercomparison Exercise Materials:

QA03TIS11 (Mussel Tissue XI)

Each of the three jars contains approximately 15 g (wet basis) of Mussel Tissue XI. This cryogenically homogenized "fresh" material was prepared from mussels collected from an urban area. This material has not been enriched or spiked and still contains its endogenous water. Each 2-oz clear glass jar has a Teflon-lined screw cap and is labeled with an individual jar number as well as the above name.

In addition, three concurrent analyses of SRM 1974b, Organics in Mussel Tissue (*Mytilus edulis*), are recommended. Three jars of this material are enclosed and the appropriate tables from the draft Certificate of Analysis are attached to these instructions.

Storage of Materials:

Mussel Tissue Material. The tissue material should be stored in the dark at temperatures of -20 °C or lower. If allowed to thaw or if stored for extended periods at temperatures higher than -40 °C, it will lose its powder-like form. If this happens, use the contents from the entire jar for analysis. This material has been stored at NIST at -80 °C and was shipped to you on dry ice. If only a portion of the contents of a jar is used, the jar should be tightly closed immediately after removal of a subsample to preserve the integrity of the remaining material for later analysis.

Instructions for Use:

You are to analyze Mussel Tissue XI and SRM 1974b, using **your** laboratory's and/or program's analytical protocols, for the concentrations (mass/mass [wet basis]) of the 26 polycyclic aromatic hydrocarbon (PAH) compounds, 25 chlorinated pesticides, and 25 polychlorinated biphenyl (PCB) congeners¹ of interest in the current NIST Intercomparison Exercise Program for Organic Contaminants in the Marine Environment. These compounds are listed in Table 1.

¹If your laboratory is not analyzing samples for all three chemical classes, you are expected to submit results only for those compounds currently being determined in your laboratory.

The percentage of water and of total extractable organics (or lipid) in Mussel Tissue XI and SRM 1974b should also be determined. You should have received sufficient material so that you can perform separate determinations for the water content if you do not dry your tissue samples prior to analysis.

The amount of material used for each analysis should correspond to the amount (wet basis) of marine tissue that you would typically analyze as prescribed in your protocols. It is best if the Mussel Tissue XI and the SRM 1974b samples are not allowed to thaw prior to the taking of samples for analysis; however, if the material has been even partially thawed, you should use the contents of the entire jar as a single sample as it is difficult to take representative samples from a jar once the material has thawed. After removing the material for analysis from the jars, the samples should be used without delay.

You should analyze three samples of Mussel Tissue XI and at least one, and more if possible, of SRM 1974b in three different batches/sets/strings/catalogs using your protocol for tissue samples. Specifically, we are asking that you analyze one sample of Mussel Tissue XI and one sample of SRM 1974b with one batch of laboratory samples; analyze a second sample of each material with another batch; and the third sample with yet another batch. This will allow a more realistic assessment of laboratory precision over a longer term than the assessment obtained when a laboratory places all three samples in the same extraction and cleanup batch and the resulting extracts are analyzed using the same calibration curve, etc.

Reporting of Results:

Please report one result, as if three figures were significant, for each of the requested analytes in each of the three replicates of the Mussel Tissue XI and of SRM 1974b. Report results in units of ng/g wet basis. Report the date of measurement of each sample in the requested m/d/y format. Also, report the results of your percentage water determinations of Mussel Tissue XI.

We recognize that the reported concentrations for some of the requested determinands will probably include concentrations of compounds reported to coelute with the determinand of interest with methods commonly in use in environmental laboratories. Please note at the bottom of your table of reported results if any coelution qualifiers are applicable to your data. Please note that any changes you make to the column or row headings **within** the tables will **not** be seen by the coordinators because only the table entries and comments at the bottom of the tables are automatically transferred to the exercise database.

We prefer that concentration values be reported for each analyte determined. If the measured concentration is below your typical reporting concentration for an analyte in a particular matrix, you can report the number and list the appropriate detection limit, quantification limit, etc. at the bottom of the data table. However, if you need to report non-numerical data please use the following conventions:

NA	"Not analyzed", "not determined"
<"value"	"Less than specified concentration", e.g., <8 ng/g

Other	"Other"; add note of explanation at end of data table, e.g., interference
DL	"Below detection limit" may be used, however, <"value" is preferable

Do not use negative numbers or parentheses to indicate "less than detection limits".

The attached file is an EXCEL file, TIS11.xls. If you have any software/hardware conversion problems, please contact Michele Schantz. The data file templates also include places for you to list the surrogate/internal standards and type of calibration curve used, and to provide a brief description of the analyses. Please **do not** add "spaces" before entering numbers in the table cells and enter them as "numbers" not as "labels". Please **do not** insert any columns or rows **within** the table in the data file. If you wish to include additional data and/or other information or comments, you may add it to the bottom of the data table in the diskette file or send it in hard copy. A printout of the data file format is shown in Table 2.

Submit your results by **July 11, 2003** as an attached file via e-mail to:

E-mail: michele.schantz@nist.gov

Further Information:

If you need further information, please contact Michele at the following address or phone numbers:

Michele M. Schantz
NIST
100 Bureau Drive Stop 8392
Gaithersburg, MD 20899-8392

Phone: (301)975-3106
FAX: (301)977-0685

Table 1: Analytes of Interest in NIST Intercomparison Exercise Program for Organic Contaminants in the Marine Environment

Chlorinated Pesticides

hexachlorobenzene	2,4'-DDE
alpha-HCH (alpha-BHC)	4,4'-DDE
beta-HCH (beta-BHC)	2,4'-DDD
gamma-HCH (gamma-BHC, Lindane)	4,4'-DDD
heptachlor	2,4'-DDT
heptachlor epoxide	4,4'-DDT
cis-chlordane (alpha-chlordane)	chlorpyrifos
trans-chlordane (gamma-chlordane)	aldrin
oxychlordane	dieldrin
cis-nonachlor	endrin
trans-nonachlor	endosulfan I
mirex	endosulfan II
	endosulfan sulfate

Polychlorinated Biphenyl Congeners

<i>PCB No.</i>	<i>Compound Name</i>
8	2,4'-dichlorobiphenyl
18	2,2',5-trichlorobiphenyl
28	2,4,4'-trichlorobiphenyl
31	2,4',5-trichlorobiphenyl
44	2,2',3,5'-tetrachlorobiphenyl
49	2,2',4,5'-tetrachlorobiphenyl
52	2,2',5,5'-tetrachlorobiphenyl
66	2,3',4,4'-tetrachlorobiphenyl
95	2,2',3,5',6-pentachlorobiphenyl
99	2,2',4,4',5-pentachlorobiphenyl
101	2,2',4,5,5'-pentachlorobiphenyl
105	2,3,3',4,4'-pentachlorobiphenyl
118	2,3',4,4',5-pentachlorobiphenyl
128	2,2',3,3',4,4'-hexachlorobiphenyl
138	2,2',3,4,4',5'-hexachlorobiphenyl
149	2,2',3,4',5',6-hexachlorobiphenyl
153	2,2',4,4',5,5'-hexachlorobiphenyl
156	2,3,3',4,4',5-hexachlorobiphenyl
170	2,2',3,3',4,4',5-heptachlorobiphenyl
180	2,2',3,4,4',5,5'-heptachlorobiphenyl
187	2,2',3,4',5,5',6-heptachlorobiphenyl
194	2,2',3,3',4,4',5,5'-octachlorobiphenyl
195	2,2',3,3',4,4',5,6-octachlorobiphenyl
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl
209	decachlorobiphenyl

Table 1. (continued)

Polycyclic aromatic hydrocarbons (PAH)

naphthalene	pyrene
2-methylnaphthalene	benz[<i>a</i>]anthracene
1-methylnaphthalene	chrysene
biphenyl	triphenylene
2,6-dimethylnaphthalene	benzo[<i>b</i>]fluoranthene
acenaphthylene	benzo[<i>j</i>]fluoranthene
acenaphthene	benzo[<i>k</i>]fluoranthene
1,6,7-trimethylnaphthalene	benzo[<i>e</i>]pyrene
fluorene	benzo[<i>a</i>]pyrene
phenanthrene	perylene
anthracene	indeno[1,2,3- <i>cd</i>]pyrene
1-methylphenanthrene	dibenz[<i>a,h</i>]anthracene
fluoranthene	benzo[<i>ghi</i>]perylene

Table 2. Diskette Data File Format (File: TIS11.*)

NIST Intercomparison Exercise Program for Organics in the Marine Environment

NIST QA Program

Sample: QA03TIS11 - Mussel Tissue XI

Please fill in all blanks; Use requested units of concentration; Report results as if 3 figures were significant

DO NOT INSERT ROWS OR COLUMNS WITHIN THIS TABLE. DO NOT MOVE CELLS.

- If necessary, add additional data/information at the end of the table.

- Use one of the following if no concentration is reported for an analyte:

NA = Not analyzed/determined; <"conc" = <detection limit conc.; Other = other, explain in a note at end of table

(DL = "below detection limit" may be used, but <"conc", e.g., <8, is preferable.)

Do not use parentheses or negative numbers to indicate "less than detection limit".

Reporting Date (m/d/y): _____

Laboratory: _____

Submitted by: _____

BRIEF DESCRIPTION OF PROCEDURES USED:

Approximate amount of sample extracted: Mussel XI _____ g, wet basis; SRM 1974b _____ g, wet basis

Method used for determining percentage water: _____

Method used for determining percentage total organic extractables (lipid): _____

Were "wet" or "dry" samples extracted? Mussel XI _____ SRM 1974b _____

Extraction method: _____

Extraction solvent: _____

Extraction time: _____

Extraction - other: _____

Sample extract cleanup method: _____

Analytical method used (e.g., GC-FID, GC-ECD):

	Analyt. Instr.	Column Phase	Col. Length, m	Col. i.d., mm	Col. film thickness, μ m
PAH	_____	_____	_____	_____	_____
Pesticides	_____	_____	_____	_____	_____
PCB Congeners	_____	_____	_____	_____	_____

Method of quantitation (IS = internal standard, ES = external standard):

PAH	_____
Pesticides	_____
PCB Congeners	_____

IF internal standard method was used, please complete the following section:

Identity of internal standards/surrogates used that were:

Added PRIOR to extraction of sample:

PAH	_____
Pesticides	_____
PCB Congeners	_____

Added after extraction/cleanup and JUST PRIOR to chromatographic analysis:

PAH	_____
Pesticides	_____
PCB Congeners	_____

Any others? Added at what point in analyses: _____

PAH	_____
Pesticides	_____
PCB Congeners	_____

IS/surrogate standards used for quantitation calculations were:

_____	those added prior to extraction
_____	those added after extraction/cleanup and just prior to chromatographic analysis

If the IS/surrogates added after extraction/cleanup extraction were used for quantitation, were results corrected for percent recovery?

Percent recovery range:	PAH _____
	Pesticides _____
	PCB Congeners _____

Calibration Curve

	Points	Conc. Range	Analytes outside of calibration curve calibration range
PAH	_____	_____	_____
Pesticides	_____	_____	_____
PCB Congeners	_____	_____	_____

Were PCB congeners separated from pesticides prior to GC? _____

Please note any differences in procedures used for SRM 19 74b analyses from those for Mussel Tissue XI described above:

RESULTS:

PERCENT WATER (List each result if determined more than once. Enter results as a number, for example 90.0. DO NOT change format of cell to percent.)

	Mussel Tissue XI (percent)	Mussel Tissue XI (percent)	Mussel Tissue XI (percent)	SRM 1974b (percent)	SRM 1974b (percent)	SRM 1974b (percent)
Water	_____	_____	_____	_____	_____	_____
PAH ANALYSES	Mussel Tissue XI Batch A Sample 1	Mussel Tissue XI Batch B Sample 2	Mussel Tissue XI Batch C Sample 3	SRM 1974b Batch A Sample 1	SRM 1974b Batch B Sample 2	SRM 1974b Batch C Sample 3
Analyst (Initials)	_____	_____	_____	_____	_____	_____
Date(s) of measurements (m/d/y)	_____	_____	_____	_____	_____	_____
Sample Jar number	_____	_____	_____	_____	_____	_____
	Mussel Tissue XI Sample 1 (ng/g wet wt)	Mussel Tissue XI Sample 2 (ng/g wet wt)	Mussel Tissue XI Sample 3 (ng/g wet wt)	SRM 1974b Sample 1 (ng/g wet wt)	SRM 1974b Sample 2 (ng/g wet wt)	SRM 1974b Sample 3 (ng/g wet wt)
naphthalene	_____	_____	_____	_____	_____	_____
2-methylnaphthalene	_____	_____	_____	_____	_____	_____
1-methylnaphthalene	_____	_____	_____	_____	_____	_____
biphenyl	_____	_____	_____	_____	_____	_____
2,6-dimethylnaphthalene	_____	_____	_____	_____	_____	_____
acenaphthylene	_____	_____	_____	_____	_____	_____
acenaphthene	_____	_____	_____	_____	_____	_____
1,6,7-trimethylnaphthalene	_____	_____	_____	_____	_____	_____
fluorene	_____	_____	_____	_____	_____	_____
phenanthrene	_____	_____	_____	_____	_____	_____
anthracene	_____	_____	_____	_____	_____	_____
1-methylphenanthrene	_____	_____	_____	_____	_____	_____
fluoranthene	_____	_____	_____	_____	_____	_____
pyrene	_____	_____	_____	_____	_____	_____
benz[a]anthracene	_____	_____	_____	_____	_____	_____
chrysene	_____	_____	_____	_____	_____	_____
triphenylene	_____	_____	_____	_____	_____	_____
benzo[b]fluoranthene	_____	_____	_____	_____	_____	_____
benzo[j]fluoranthene	_____	_____	_____	_____	_____	_____
benzo[k]fluoranthene	_____	_____	_____	_____	_____	_____
benzo[e]pyrene	_____	_____	_____	_____	_____	_____
benzo[a]pyrene	_____	_____	_____	_____	_____	_____
perylene	_____	_____	_____	_____	_____	_____
indeno[1,2,3-cd]pyrene	_____	_____	_____	_____	_____	_____
dibenz[a,h]anthracene	_____	_____	_____	_____	_____	_____
benzo[ghi]perylene	_____	_____	_____	_____	_____	_____

PESTICIDE ANALYSES	Mussel Tissue XI Batch A Sample 1	Mussel Tissue XI Batch B Sample 2	Mussel Tissue XI Batch C Sample 3	SRM 1974b Batch A Sample 1	SRM 1974b Batch B Sample 2	SRM 1974b Batch C Sample 3
Analyst (Initials)						
Date(s) of measurements (m/d/y)						
Sample Jar number						
	Mussel Tissue XI Sample 1 (ng/g wet wt)	Mussel Tissue XI Sample 2 (ng/g wet wt)	Mussel Tissue XI Sample 3 (ng/g wet wt)	SRM 1974b Sample 1 (ng/g wet wt)	SRM 1974b Sample 2 (ng/g wet wt)	SRM 1974b Sample 3 (ng/g wet wt)
alpha-HCH (a-BHC)						
hexachlorobenzene						
gamma-HCH (g-BHC,lindane)						
beta-HCH (b-BHC)						
heptachlor						
aldrin						
heptachlor epoxide						
oxychlordane						
gamma-chlordane						
2,4'-DDE						
endosulfan I						
cis-chlordane (alpha-chlordane)						
trans-nonachlor						
dieldrin						
4,4'-DDE						
2,4'-DDD						
endrin						
endosulfan II						
4,4'-DDD						
2,4'-DDT						
cis-nonachlor						
4,4'-DDT						
mirex						
endosulfan sulfate						
chlorpyrifos						
PCB CONGENER ANALYSES	Mussel Tissue XI Batch A Sample 1	Mussel Tissue XI Batch B Sample 2	Mussel Tissue XI Batch C Sample 3	SRM 1974b Batch A Sample 1	SRM 1974b Batch B Sample 2	SRM 1974b Batch C Sample 3
Analyst (Initials)						
Date(s) of measurements (m/d/y)						
Sample Jar number						
	Mussel Tissue XI Sample 1 (ng/g wet wt)	Mussel Tissue XI Sample 2 (ng/g wet wt)	Mussel Tissue XI Sample 3 (ng/g wet wt)	SRM 1974b Sample 1 (ng/g wet wt)	SRM 1974b Sample 2 (ng/g wet wt)	SRM 1974b Sample 3 (ng/g wet wt)
PCB 8						
PCB 18						
PCB 28						
PCB 31						
PCB 44						
PCB 49						
PCB 52						
PCB 66						
PCB 95						
PCB 99						
PCB 101						
PCB 105						
PCB 118						
PCB 128						
PCB 138						
PCB 149						
PCB 153						
PCB 156						
PCB 170						
PCB 180						
PCB 187						
PCB 194						
PCB 195						
PCB 206						
PCB 209						
	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)
total extractable organics (lipid)						
(Any additional data/information should be added here.)						

Draft Certificate Table 1. Certified Concentrations for Selected PAHs in SRM 1974b

	mass fractions in $\mu\text{g/kg}^a$					
	wet-mass basis			dry-mass basis		
Naphthalene ^{d,e,f,g,h,i,j}	2.43	±	0.12 ^b	24.0	±	1.2 ^b
Fluorene ^{d,e,f,g,h,i,j}	0.494	±	0.036 ^b	4.88	±	0.36 ^b
Phenanthrene ^{d,e,f,g,h,i,j}	2.58	±	0.11 ^b	25.5	±	1.1 ^b
Anthracene ^{d,e,f,g,h,i,j}	0.527	±	0.071 ^c	5.20	±	0.71 ^c
1-Methylphenanthrene ^{d,e,f,g,h,i,j}	0.98	±	0.13 ^c	9.66	±	1.3 ^c
2-Methylphenanthrene ^{d,e,f,g}	1.28	±	0.31 ^b	24.0	±	1.2 ^b
3-Methylphenanthrene ^{d,e,g}	1.27	±	0.04 ^c	12.5	±	0.4 ^c
Fluoranthene ^{d,e,f,g,h,i,j}	17.1	±	0.7 ^b	169	±	7 ^b
Pyrene ^{d,e,f,g,h,i,j}	18.04	±	0.6 ^b	178	±	6 ^b
Benz[<i>a</i>]anthracene ^{d,e,f,g,h,i,j}	4.74	±	0.53 ^b	46.8	±	5.2 ^b
Chrysene ^{d,g,h}	6.3	±	1.0 ^b	62.2	±	9.9 ^b
Triphenylene ^{d,g,h}	4.33	±	0.72 ^b	42.7	±	7.1 ^b
Benzo[<i>b</i>]fluoranthene ^{e,f,g,h,i,j}	6.46	±	0.59 ^b	63.8	±	5.8 ^b
Benzo[<i>j</i>]fluoranthene ^{e,f,g,h,i}	2.99	±	0.29 ^b	29.5	±	2.9 ^b
Benzo[<i>k</i>]fluoranthene ^{d,e,f,g,h,i,j}	3.16	±	0.18 ^b	31.2	±	1.8 ^b
Benzo[<i>a</i>]fluoranthene ^{d,e,f,g}	0.634	±	0.074 ^b	6.26	±	0.73 ^b
Benzo[<i>e</i>]pyrene ^{d,e,f,g,h,i,j}	10.3	±	1.1 ^b	102	±	11 ^b
Benzo[<i>a</i>]pyrene ^{d,e,f,g,h,i,j}	2.80	±	0.38 ^b	27.6	±	3.8 ^b
Perylene ^{d,e,f,g,h,i,j}	0.99	±	0.14 ^b	9.8	±	1.4 ^b
Benzo[<i>ghi</i>]perylene ^{d,e,f,g,h,i,j}	3.12	±	0.33 ^b	30.8	±	3.3 ^b
Indeno[1,2,3- <i>cd</i>]pyrene ^{d,e,f,g,h,i,j}	2.14	±	0.11 ^b	21.1	±	1.1 ^b
Dibenz[<i>a,h</i>]anthracene ^{e,f,g,h,i}	0.327	±	0.031 ^c	3.23	±	0.31 ^c

^a Concentrations reported on both wet- and dry-mass basis; material as received contains 89.87 % ± 0.05 % (95 % confidence level) water.

^b Certified values are weighted means of the results from three to seven analytical methods [17]. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2 (approximately 95% confidence), calculated by combining a between-method variance incorporating inter-method bias with a pooled within-source variance following the ISO/NIST Guide to the Expression of Uncertainty in Measurements [2].

^c The certified value is an unweighted mean of the results from three to seven analytical methods. The uncertainty listed with the value is an expanded uncertainty about the mean, with coverage factor 2, calculated by combining a between-method variance [18] with a pooled, within method variance following the ISO/NIST Guide to the Expression of Uncertainty in Measurement [2]. Note for anthracene and 1-methylphenanthrene the within method variance for the interlaboratory study was not used for the calculation of the expanded uncertainty.

^d GC/MS (Ia) on a relatively non-polar proprietary phase after PFE with 50% hexane/50% acetone mixture.

^e GC/MS (Ib) on 50% phenyl-substituted methylpolysiloxane phase; same extracts analyzed as in GC/MS (Ia).

^f GC/MS (II) on 50% phenyl-substituted methylpolysiloxane phase after PFE with DCM.

^g GC/MS (III) on a relatively non-polar proprietary phase and 50% phenyl-substituted methylpolysiloxane phase after Soxhlet extraction with DCM.

^h GC/MS (IV) on a relatively non-polar proprietary phase after Soxhlet extraction with DCM.

ⁱ GC/MS (V) on 50% phenyl-substituted methylpolysiloxane phase after PFE with DCM.

^j 2000 Interlaboratory Comparison Study [10] with 16 laboratories submitting data.

Draft Certificate Table 2.

Certified Concentrations for Selected PCB Congeners^a in SRM 1974b

		mass fractions in $\mu\text{g/kg}^b$	
		wet-mass basis	dry mass basis
PCB 18	(2,2',5-Trichlorobiphenyl) ^{e,f,g,h,i,j,k,l}	0.84 \pm 0.13 ^c	8.30 \pm 1.3 ^c
PCB 28	(2,4,4'-Trichlorobiphenyl) ^{e,f,g,h,j,k,l}	3.43 \pm 0.25 ^c	33.9 \pm 2.5 ^c
PCB 31	(2,4',5-Trichlorobiphenyl) ^{e,f,g,h,i,j,k,l}	2.88 \pm 0.23 ^c	28.4 \pm 2.3 ^c
PCB 44	(2,2',5'-Tetrachlorobiphenyl) ^{e,f,g,h,i,j,k,l}	3.85 \pm 0.20 ^c	38.0 \pm 2.0 ^c
PCB 49	(2,2',4,5'-Tetrachlorobiphenyl) ^{e,f,g,h,i,j,k,l}	5.66 \pm 0.23 ^c	55.9 \pm 2.3 ^c
PCB 52	(2,2',5,5'-Tetrachlorobiphenyl) ^{e,f,g,h,i,j,k,l}	6.26 \pm 0.37 ^c	61.8 \pm 3.7 ^c
PCB 66	(2,3',4,4'-Tetrachlorobiphenyl) ^{e,f,g,h,j,k,l}	6.37 \pm 0.37 ^c	62.9 \pm 3.7 ^c
PCB 70	(2,3',4',5-Tetrachlorobiphenyl) ^{e,f,h,i}	6.01 \pm 0.22 ^d	59.3 \pm 2.2 ^d
PCB 74	(2,4,4',5-Tetrachlorobiphenyl) ^{e,f,h,i}	3.55 \pm 0.23 ^c	35.0 \pm 2.3 ^c
PCB 82	(2,2',3,3',4-Pentachlorobiphenyl) ^{e,f,g,i}	1.16 \pm 0.14 ^c	11.5 \pm 1.4 ^c
PCB 87	(2,2',3,4,5'-Pentachlorobiphenyl) ^{e,f,i}	4.33 \pm 0.36 ^d	42.7 \pm 3.6 ^d
PCB 95	(2,2',3,5',6-Pentachlorobiphenyl) ^{e,f,g,h,j,k,l}	6.04 \pm 0.36 ^c	59.6 \pm 3.6 ^c
PCB 99	(2,2',4,4',5-Pentachlorobiphenyl) ^{e,f,g,h,i,j,k,l}	5.92 \pm 0.27 ^c	58.4 \pm 2.7 ^c
PCB 101	(2,2',4,5,5'-Pentachlorobiphenyl) ^{e,f,h,i,j,k,l}	10.7 \pm 1.1 ^c	106 \pm 11 ^c
PCB 105	(2,3,3',4,4'-Pentachlorobiphenyl) ^{e,f,g,h,i,j,k,l}	4.00 \pm 0.18 ^c	39.5 \pm 1.8 ^c
PCB 107	(2,3,3',4,5'-Pentachlorobiphenyl) ^{e,f,g,h,i}	1.03 \pm 0.12 ^c	10.2 \pm 1.2 ^c
PCB 110	(2,3,3',4,6-Pentachlorobiphenyl) ^{e,f,h}	10.0 \pm 0.7 ^c	99.1 \pm 7.1 ^c
PCB 118	(2,3',4,4',5-Pentachlorobiphenyl) ^{e,f,g,h,i,j,k,l}	10.3 \pm 0.4 ^c	102 \pm 4 ^c
PCB 128	(2,2',3,3',4,4'-Hexachlorobiphenyl) ^{e,f,g,h,i,j,k,l}	1.79 \pm 0.12 ^c	17.7 \pm 1.2 ^c
PCB 132	(2,2',3,3',4,6'-Hexachlorobiphenyl) ^{e,f,g,h,i}	2.43 \pm 0.25 ^c	24.0 \pm 2.5 ^c
PCB 138	(2,2',3,4,4',5'-Hexachlorobiphenyl) ^{e,f,h,j,k,l}	9.2 \pm 1.4 ^c	91 \pm 14 ^c
PCB 146	(2,2',3,4',5,5'-Hexachlorobiphenyl) ^{e,f,g,h}	1.92 \pm 0.16 ^c	19.0 \pm 1.6 ^c
PCB 149	(2,2',3,4',5',6-Hexachlorobiphenyl) ^{e,f,h,i,j,k,l}	7.01 \pm 0.28 ^c	69.2 \pm 2.8 ^c
PCB 151	(2,2',3,5,5',6-Hexachlorobiphenyl) ^{e,f,g,i}	1.86 \pm 0.16 ^c	18.4 \pm 1.6 ^c
PCB 153	(2,2',4,4',5,5'-Hexachlorobiphenyl) ^{e,f,g,h,i,j,k,l}	12.3 \pm 0.8 ^c	121 \pm 8 ^c
PCB 156	(2,3,3',4,4',5-Hexachlorobiphenyl) ^{e,f,h,j,k,l}	0.718 \pm 0.080 ^c	7.09 \pm 0.79 ^c
PCB 158	(2,3,3',4,4',6-Hexachlorobiphenyl) ^{e,g,h,i}	0.999 \pm 0.096 ^c	9.86 \pm 0.95 ^c
PCB 170	(2,2',3,3',4,4',5-Heptachlorobiphenyl) ^{e,f,h,j,k,l}	0.269 \pm 0.034 ^c	2.66 \pm 0.34 ^c
PCB 180	(2,2',3,4,4',5,5'-Heptachlorobiphenyl) ^{e,f,g,h,i,j,k,l}	1.17 \pm 0.10 ^c	11.5 \pm 1.0 ^c
PCB 183	(2,2',3,4,4',5',6-Heptachlorobiphenyl) ^{e,f,g,h,i}	1.25 \pm 0.03 ^c	12.3 \pm 0.3 ^c
PCB 187	(2,2',3,4',5,5',6-Heptachlorobiphenyl) ^{e,f,g,h,i,j,k,l}	2.94 \pm 0.15 ^c	29.0 \pm 1.5 ^c

^a PCB congeners are numbered according to the scheme proposed by Ballschmiter and Zell [19] and later revised by Schulte and Malisch [20] to conform with IUPAC rules; for the specific congeners mentioned in this SRM, only PCB 107 is different in the numbering systems. Under the Ballschmiter and Zell numbering system, the IUPAC PCB 107 is listed as PCB 108.

^b Concentrations reported on both wet- and dry-mass basis; material as received contains 89.87 % \pm 0.05 % (95 % confidence level) water.

^c Certified values are weighted means of the results from three to eight analytical methods [17]. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2 (approximately 95% confidence), calculated by combining a between-method variance incorporating inter-method bias with a pooled within-source variance following the ISO/NIST Guide to the Expression of Uncertainty in Measurements [2].

^d The certified value is an unweighted mean of the results from three analytical methods. The uncertainty listed with the value is an expanded uncertainty about the mean, with coverage factor 2, calculated by combining a between-method variance [18] with a pooled, within method variance following the ISO/NIST Guide to the Expression of Uncertainty in Measurement [2].

^e GC/MS (Ia) on a relatively non-polar proprietary phase after PFE with 50% hexane/50% acetone mixture.

^f GC/MS (Ib) on 5 % phenyl-substituted methylpolysiloxane phase; same extracts analyzed as in GC/MS (Ia).

^g GC-ECD (Ia) on 5 % phenyl-substituted methylpolysiloxane phase after PFE with DCM.

^h GC-ECD (Ib) on a relatively non-polar proprietary phase; same extracts as GC-ECD (Ia).

ⁱ GC-ECD (II) on a 5 % phenyl-substituted methylpolysiloxane phase after Soxhlet extraction with DCM.

^j GC/MS (II) on a relatively non-polar proprietary phase after Soxhlet extraction with DCM.

^k GC-ECD (III) on a 5 % phenyl-substituted methylpolysiloxane phase and a relatively non-polar proprietary phase after PFE with DCM.

^l 2000 Interlaboratory Comparison Study [10] with 16 laboratories submitting data.

Draft Certificate Table 3. Certified Concentrations for Selected Chlorinated Pesticides in SRM 1974b

	mass fractions in $\mu\text{g/kg}^{\text{a,b}}$			
	wet-mass basis		dry-mass basis	
<i>cis</i> -Chlordane ^{c,d,e,f,g,h,i,j}	1.36	± 0.10	13.4	± 1.0
<i>trans</i> -Chlordane ^{c,d,e,f,g,h,i,j}	1.14	± 0.17	11.3	± 1.7
<i>trans</i> -Nonachlor ^{c,d,e,f,g,h,i,j}	1.30	± 0.14	12.8	± 1.4
2,4'-DDE ^{c,d,h,i,j}	0.336	± 0.044	3.32	± 0.43
4,4'-DDE ^{c,d,e,f,g,h,i,j}	4.15	± 0.38	41.0	± 3.8
2,4'-DDD ^{c,d,e,f,h,i,j}	1.09	± 0.16	10.8	± 1.6
4,4'-DDD ^{c,d,e,f,g,h,i,j}	3.34	± 0.22	33.0	± 2.2

^a Concentrations reported on both wet- and dry-mass basis; material as received contains 89.87 % \pm 0.05 % (95 % confidence level) water.

^b Certified values are weighted means of the results from five to eight analytical methods [17]. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2 (approximately 95% confidence), calculated by combining a between-source variance incorporating inter-method bias with a pooled within-source variance following the ISO/NIST Guide to the Expression of Uncertainty in Measurements [2].

^c GC/MS (Ia) on a relatively non-polar proprietary phase after PFE with 50% hexane/50% acetone mixture.

^d GC/MS (Ib) on 50 % phenyl-substituted methylpolysiloxane phase; same extracts analyzed as in GC/MS (Ia).

^e GC-ECD (Ia) on 5 % phenyl-substituted methylpolysiloxane phase after PFE with DCM.

^f GC-ECD (Ib) on a relatively non-polar proprietary phase; same extracts as GC-ECD (Ia).

^g GC-ECD (II) on a 5% phenyl-substituted methylpolysiloxane phase after Soxhlet extraction with DCM.

^h GC/MS (II) on a relatively non-polar proprietary phase after Soxhlet extraction with DCM.

ⁱ GC-ECD (III) on a 5% phenyl-substituted methylpolysiloxane phase and a relatively non-polar proprietary phase after PFE with DCM.

^j 2000 Interlaboratory Comparison Study [10] with 16 laboratories submitting data.

Draft Certificate Table 4. Reference Concentrations for Selected PAHs in SRM 1974b

	mass fractions in $\mu\text{g/kg}^{\text{a}}$			
	wet-mass basis		dry-mass basis	
1-Methylnaphthalene ^{e,f,g,h,i,j,k}	0.614	\pm 0.050 ^b	6.06	\pm 0.49 ^b
2-Methylnaphthalene ^{e,f,g,h,i,j,k}	1.25	\pm 0.09 ^b	12.3	\pm 0.9 ^b
2,6-Dimethylnaphthalene ^{e,f,g,h,i,j,k}	0.33	\pm 0.16 ^b	3.3	\pm 1.6 ^b
2,3,5-Trimethylnaphthalene ^{e,f,g,h,i,j,k}	0.400	\pm 0.032 ^b	3.95	\pm 0.32 ^b
Biphenyl ^{e,f,g,h,i,j,k}	0.61	\pm 0.14 ^b	6.0	\pm 1.4 ^b
Acenaphthylene ^{e,f,g,h,i,j,k}	0.48	\pm 0.12 ^b	4.7	\pm 1.2 ^b
Acenaphthene ^{e,f,g,h,i,j,k}	0.274	\pm 0.054 ^b	2.70	\pm 0.53 ^b
4-Methylphenanthrene and 9-Methylphenanthrene ^{g,h}	1.60	\pm 0.18 ^b	15.8	\pm 1.8 ^b
2-Methylanthracene ^{e,f}	0.232	\pm 0.004 ^c	2.29	\pm 0.04 ^c
Cyclopenta[cd]pyrene ^h	0.227	\pm 0.010 ^d	2.24	\pm 0.10 ^d
Benzo[c]phenanthrene ^{e,f,h}	1.85	\pm 0.21 ^b	18.3	\pm 2.1 ^b
Benzo[b]chrysene ^h	0.507	\pm 0.030 ^d	5.00	\pm 0.30 ^d
Benzo[c]chrysene ^{g,h}	0.318	\pm 0.042 ^b	3.14	\pm 0.42 ^b
Dibenz[a,c]anthracene ^{f,g}	0.212	\pm 0.013 ^c	2.09	\pm 0.13 ^c
Dibenz[a,j]anthracene ^{g,h}	0.467	\pm 0.048 ^b	4.61	\pm 0.47 ^b
Picene ^{g,h}	0.75	\pm 0.16 ^b	7.4	\pm 1.6 ^b

^a Concentrations reported on both wet- and dry-mass basis; material as received contains 89.87 % \pm 0.05 % (95 % confidence level) water.

^b The reference value is a weighted mean of the results from two to seven analytical methods [17]. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2 (approximately 95% confidence), calculated by combining a between-source variance incorporating inter-method bias with a pooled within-source variance following the ISO/NIST Guide to the Expression of Uncertainty in Measurements [2].

^c The reference value is an unweighted mean of the results from two analytical methods. The uncertainty listed with the value is an expanded uncertainty about the mean, with coverage factor 2, calculated by combining a between-method variance [18] with a pooled, within method variance following the ISO/NIST Guide to the Expression of Uncertainty in Measurement [2].

^d The reference value is the mean of results obtained by NIST using one analytical technique. The expanded uncertainty, U , is calculated as $U = ku_c$, where u_c is intended to represent, at the level of one standard deviation, the combined standard uncertainty calculated according to the ISO Guide [2]. The coverage factor, k , is determined from the Student's t -distribution corresponding to the appropriate associated degrees of freedom and 95 % confidence for each analyte.

^e GC/MS (Ia) on a relatively non-polar proprietary phase after PFE with 50% hexane/50% acetone mixture.

^f GC/MS (Ib) on 50% phenyl-substituted methylpolysiloxane phase; same extracts analyzed as in GC/MS (Ia).

^g GC/MS (II) on 50% phenyl-substituted methylpolysiloxane phase after PFE with DCM.

^h GC/MS (III) on a relatively non-polar proprietary phase and 50% phenyl-substituted methylpolysiloxane phase after Soxhlet extraction with DCM.

ⁱ GC/MS (IV) on a relatively non-polar proprietary phase after Soxhlet extraction with DCM.

^j GC/MS (V) on 50% phenyl-substituted methylpolysiloxane phase after PFE with DCM.

^k 2000 Interlaboratory Comparison Study [10] with 16 laboratories submitting data.

Draft Certificate Table 5. Reference Concentrations for Selected PCB Congeners^a and Total PCBs in SRM 1974b

		mass fractions in µg/kg ^b			
		wet-mass basis		dry-mass basis	
PCB 8	(2,4'-Dichlorobiphenyl) ^{f,g}	0.37	± 0.11 ^c	3.7	± 1.1 ^c
PCB 45	(2,2',3,6-Tetrachlorobiphenyl) ^{f,h,i,j}	0.50	± 0.18 ^d	4.9	± 1.8 ^d
PCB 56	(2,3,3',4-Tetrachlorobiphenyl) ^{f,h,i,k}	2.82	± 0.56 ^d	27.8	± 5.5 ^d
PCB 63	(2,3,4',5-Tetrachlorobiphenyl) ^{f,h,j,k}	0.46	± 0.14 ^d	4.5	± 1.4 ^d
PCB 77	(3,3',4,4'-Tetrachlorobiphenyl) ^l	0.563	± 0.023 ^c	5.56	± 0.23 ^c
PCB 92	(2,2',3,5,5'-Pentachlorobiphenyl) ^{f,h,i,k}	2.76	± 0.58 ^d	27.2	± 5.7 ^d
PCB 157	(2,3,3',4,4',5'-Hexachlorobiphenyl) ^{f,h,i}	0.236	± 0.024 ^d	2.33	± 0.24 ^d
PCB 163	(2,3,3',4',5,6-Hexachlorobiphenyl) ^{f,h,i}	2.02	± 0.05 ^c	19.9	± 0.5 ^c
Total PCBs ^m		205	± 42	2020	± 420

^a PCB congeners are numbered according to the scheme proposed by Ballschmiter and Zell [19] and later revised by Schulte and Malisch [20] to conform with IUPAC rules; for the specific congeners mentioned in this SRM, only PCB 107 (Table 2) is different in the numbering systems. Under the Ballschmiter and Zell numbering system, the IUPAC PCB 107 is listed as PCB 108.

^b Concentrations reported on both wet- and dry-mass basis; material as received contains 89.87 % ± 0.05 % (95 % confidence level) water.

^c The reference value is an unweighted mean of the results from two to three analytical methods. The uncertainty listed with the value is an expanded uncertainty about the mean, with coverage factor 2, calculated by combining a between-method variance [18] with a pooled, within method variance following the ISO/NIST Guide to the Expression of Uncertainty in Measurement [2].

^d The reference value is a weighted mean of the results from three to four analytical methods [17]. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2 (approximately 95% confidence), calculated by combining a between-method variance incorporating inter-method bias with a pooled within-source variance following the ISO/NIST Guide to the Expression of Uncertainty in Measurements [2].

^e The reference value is the mean of results obtained by NIST using one analytical technique. The expanded uncertainty, U , is calculated as $U = ku_c$, where u_c is intended to represent, at the level of one standard deviation, the combined standard uncertainty calculated according to the ISO Guide [2]. The coverage factor, k , is determined from the Student's t -distribution corresponding to the appropriate associated degrees of freedom and 95 % confidence for the analyte.

^f GC-ECD (Ib) on a relatively non-polar proprietary phase; same extracts as GC-ECD (Ia).

^g 2000 Interlaboratory Comparison Study [10] with 16 laboratories submitting data.

^h GC/MS (Ia) on a relatively non-polar proprietary phase after PFE with 50% hexane/50% acetone mixture.

ⁱ GC/MS (Ib) on 50 % phenyl-substituted methylpolysiloxane phase; same extracts analyzed as in GC/MS (Ia).

^j GC-ECD (Ia) on 5 % phenyl-substituted methylpolysiloxane phase after PFE with DCM.

^k GC-ECD (II) on a 5% phenyl-substituted methylpolysiloxane phase after Soxhlet extraction with DCM.

^l GC/MS on a 5 % phenyl-substituted methylpolysiloxane phase; same extracts analyzed as in GC-ECD (I) fractionated using a PYE column.

^m Interlaboratory comparison study with four laboratories submitting data (See Preparation and Analysis for definition of total PCBs.). The expanded uncertainty, U , is calculated as $U = ku_c$, where u_c is intended to represent, at the level of one standard deviation, the combined standard uncertainty calculated according to the ISO Guide [2]. The coverage factor, k , is determined from the Student's t -distribution corresponding to the appropriate associated degrees of freedom and 95 % confidence for the total PCBs.

Draft Certificate Table 6.

Reference Concentrations for Selected Chlorinated Pesticides and Total Extractable Organics in SRM 1974b

	mass fractions in $\mu\text{g/kg}^a$	
	wet-mass basis	dry-mass basis
Heptachlor ^{d,e}	0.212 \pm 0.084 ^b	2.09 \pm 0.83 ^b
Oxychlorodane ^{d,e}	0.362 \pm 0.072 ^b	3.57 \pm 0.71 ^b
Dieldrin ^{d,e,f,g,h,i}	0.62 \pm 0.13 ^c	6.1 \pm 1.3 ^c
<i>cis</i> -Nonachlor ^{d,e,f,g,h,i,j}	0.64 \pm 0.16 ^c	6.3 \pm 1.6 ^c
2,4'-DDT ^{e,h,i}	0.894 \pm 0.057 ^b	8.83 \pm 0.56 ^b
4,4'-DDT ^{d,e,f,g,h,i,j,k}	0.396 \pm 0.096 ^c	3.91 \pm 0.94 ^c
Percent		
Total Extractable Organics (TEO) ^l	0.64 \pm 0.13	

^a Concentrations reported on both wet- and dry-mass basis; material as received contains 89.87 % \pm 0.05 % (95 % confidence level) water.

^b The reference value is an unweighted mean of the results from two to three analytical methods. The uncertainty listed with the value is an expanded uncertainty about the mean, with coverage factor 2, calculated by combining a between-method variance [18] with a pooled, within method variance following the ISO/NIST Guide to the Expression of Uncertainty in Measurement [2].

^c The reference value is a weighted mean of the results from six to eight analytical methods [17]. The uncertainty listed with each value is an expanded uncertainty about the mean, with coverage factor 2 (approximately 95% confidence), calculated by combining a between-method variance incorporating inter-method bias with a pooled within-source variance following the ISO/NIST Guide to the Expression of Uncertainty in Measurements [2].

^d GC-ECD (Ib) on a relatively non-polar proprietary phase; same extracts as GC-ECD (Ia).

^e GC-ECD (III) on a 5% phenyl-substituted methylpolysiloxane phase and a relatively non-polar proprietary phase after PFE with DCM.

^f GC/MS (Ib) on 50 % phenyl-substituted methylpolysiloxane phase; same extracts analyzed as in GC/MS (Ia).

^g GC-ECD (Ia) on 5 % phenyl-substituted methylpolysiloxane phase after PFE with DCM.

^h GC/MS (II) on a relatively non-polar proprietary phase after Soxhlet extraction with DCM.

ⁱ 2000 Interlaboratory Comparison Study [10] with 16 laboratories submitting data.

^j GC/MS (Ia) on a relatively non-polar proprietary phase after PFE with 50% hexane/50% acetone mixture.

^k GC-ECD (II) on a 5% phenyl-substituted methylpolysiloxane phase after Soxhlet extraction with DCM.

^l Interlaboratory comparison study with six laboratories submitting data. The expanded uncertainty, U , is calculated as $U = ku_c$, where u_c is intended to represent, at the level of one standard deviation, the combined standard uncertainty calculated according to the ISO Guide [2]. The coverage factor, k , is determined from the Student's t -distribution corresponding to the appropriate associated degrees of freedom and 95 % confidence for the TEO.

Appendix B: Description, Storage, Use, and Reporting Instructions for Marine Sediment XII (QA03SED12)

**NIST Intercomparison Exercise Program for
Organic Contaminants in the Marine Environment**

NIST QA Program

**Intercomparison Exercise: Marine Sediment XII
Description of Materials and Instructions**

Intercomparison Exercise Materials:

QA03SED12 (Marine Sediment XII)

Each of the three jars contains 20 g (wet basis) of Marine Sediment XII. This wetted sediment was prepared from material that was collected from a site near the Northwestern US coast and then freeze-dried, ground sieved, and radiation-sterilized. This material has not been enriched or spiked. Each 2-oz clear glass jar has a Teflon-lined screw cap and is labeled with an individual jar number as well as the above name.

In addition, three concurrent analyses of SRM 1941b, Organics in Marine Sediment, are recommended. This material can be obtained from the NIST Standard Reference Materials Program (\$400/50 g (dry basis) (phone: 301/975-6776; fax: 301/948-3730). See the following link for information on ordering on-line: http://patapsco.nist.gov/srmcatalog/common/view_detail.cfm?srm=1941b.

Storage of Materials:

Marine Sediment Material. This Marine Sediment XII material should be stored in the dark at temperatures of -15 °C or lower. If only a portion of the contents of a jar is used, that jar should be tightly closed immediately after removal of a subsample to preserve the integrity of the remaining material for later analysis.

Instructions for Use:

You are to analyze Marine Sediment XII and SRM 1941b, using **your** laboratory's and/or program's analytical protocols, for the concentrations (mass/mass [dry basis]) of the 26 polycyclic aromatic hydrocarbon (PAH) compounds, 25 chlorinated pesticides, and 25 polychlorinated biphenyl (PCB) congeners² of interest in the current NIST Intercomparison Exercise Program for Organic Contaminants in the Marine Environment. These compounds are listed in Table 1.

²If your laboratory is not analyzing samples for all three chemical classes, you are expected to submit results only for those compounds currently being determined in your laboratory.

The percentage of water in Sediment XII should be determined so that the results can be reported on a dry basis. You should have received sufficient material so that you can perform separate determinations for the water content if you do not dry your sediment samples prior to analysis. In addition, the percentage of total organic carbon should be determined in Sediment XII and SRM 1941b.

The amount of material used for each analysis should correspond to the amount (wet basis) of marine sediment that you would typically analyze as prescribed in your protocols. Prior to removing an aliquot of Sediment XII, you should thaw the sample in the jar and then **stir or otherwise mix it thoroughly**.

You should analyze three samples of Marine Sediment XII and at least one, and more if possible, of SRM 1941b in three different batches/sets/strings/catalogs using your protocol for marine sediment samples. Specifically, we are asking that you analyze one sample of Sediment XII and one sample of SRM 1941b with one batch of laboratory samples; analyze a second sample of each material with another batch; and the third sample with yet another batch. This will allow a more realistic assessment of laboratory precision over a longer term than the assessment obtained when a laboratory places all three samples in the same extraction and cleanup batch and the resulting extracts are analyzed using the same calibration curve, etc.

Reporting of Results:

Please report one result, as if three figures were significant, for each of the requested analytes in each of the three replicates of the Marine Sediment XII and of SRM 1941b. Report results in units of ng/g **dry** basis. Report the date of measurement of each sample in the requested m/d/y format. Also, report the results of your percentage water determinations of Marine Sediment XII.

We recognize that the reported concentrations for some of the requested determinands will probably include concentrations of compounds reported to coelute with the determinand of interest with methods commonly in use in environmental laboratories. Please note at the bottom of your table of reported results if any coelution qualifiers are applicable to your data. Please note that any changes you make to the column or row headings **within** the tables will **not** be seen by the coordinators because only the table entries and comments at the bottom of the tables are automatically transferred to the exercise database.

We prefer that concentration values be reported for each analyte determined. If the measured concentration is below your typical reporting concentration for an analyte in a particular matrix, you can report the number and list the appropriate detection limit, quantification limit, etc. at the bottom of the data table. However, if you need to report non-numerical data please use the following conventions:

NA	"Not analyzed", "not determined"
<"value"	"Less than specified concentration", e.g., <8 ng/g
Other	"Other"; add note of explanation at end of data table, e.g., interference
DL	"Below detection limit" may be used, however, <"value" is preferable

Do not use negative numbers or parentheses to indicate "less than detection limits".

The attached file is an EXCEL file, SED12.xls. If you have any software/hardware conversion problems, please contact Michele Schantz. The data file templates also include places for you to list the surrogate/internal standards and type of calibration curve used, and to provide a brief description of the analyses. Please **do not** add "spaces" before entering numbers in the table cells and enter them as "numbers" not as "labels". Please **do not** insert any columns or rows **within** the table in the data file. If you wish to include additional data and/or other information or comments, you may add it to the bottom of the data table in the diskette file or send it in hard copy. A printout of the data file format is shown in Table 2.

Submit your results by **July 11, 2003** as an attached file via e-mail to:

E-mail:

michele.schantz@nist.gov

Further Information:

If you need further information, please contact Michele at the following address or phone numbers:

Michele M. Schantz
NIST
100 Bureau Drive Stop 8392
Gaithersburg, MD 20899-8392

Phone: (301)975-3106

FAX: (301)977-0685

Table 1: Analytes of Interest in NIST Intercomparison Exercise Program for Organic Contaminants in the Marine Environment

Chlorinated Pesticides

hexachlorobenzene	2,4'-DDE
alpha-HCH (alpha-BHC)	4,4'-DDE
beta-HCH (beta-BHC)	2,4'-DDD
gamma-HCH (gamma-BHC, Lindane)	4,4'-DDD
heptachlor	2,4'-DDT
heptachlor epoxide	4,4'-DDT
cis-chlordane (alpha-chlordane)	chlorpyrifos
trans-chlordane (gamma-chlordane)	aldrin
oxychlordane	dieldrin
cis-nonachlor	endrin
trans-nonachlor	endosulfan I
mirex	endosulfan II
	endosulfan sulfate

Polychlorinated Biphenyl Congeners

<i>PCB No.</i>	<i>Compound Name</i>
8	2,4'-dichlorobiphenyl
18	2,2',5-trichlorobiphenyl
28	2,4,4'-trichlorobiphenyl
31	2,4',5-trichlorobiphenyl
44	2,2',3,5'-tetrachlorobiphenyl
49	2,2',4,5'-tetrachlorobiphenyl
52	2,2',5,5'-tetrachlorobiphenyl
66	2,3',4,4'-tetrachlorobiphenyl
95	2,2',3,5',6-pentachlorobiphenyl
99	2,2',4,4',5-pentachlorobiphenyl
101	2,2',4,5,5'-pentachlorobiphenyl
105	2,3,3',4,4'-pentachlorobiphenyl
118	2,3',4,4',5-pentachlorobiphenyl
128	2,2',3,3',4,4'-hexachlorobiphenyl
138	2,2',3,4,4',5'-hexachlorobiphenyl
149	2,2',3,4',5',6-hexachlorobiphenyl
153	2,2',4,4',5,5'-hexachlorobiphenyl
156	2,3,3',4,4',5-hexachlorobiphenyl
170	2,2',3,3',4,4',5-heptachlorobiphenyl
180	2,2',3,4,4',5,5'-heptachlorobiphenyl
187	2,2',3,4',5,5',6-heptachlorobiphenyl
194	2,2',3,3',4,4',5,5'-octachlorobiphenyl
195	2,2',3,3',4,4',5,6-octachlorobiphenyl
206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl
209	decachlorobiphenyl

Table 1. (continued)

Polycyclic aromatic hydrocarbons (PAH)

naphthalene	pyrene
2-methylnaphthalene	benz[<i>a</i>]anthracene
1-methylnaphthalene	chrysene
biphenyl	triphenylene
2,6-dimethylnaphthalene	benzo[<i>b</i>]fluoranthene
acenaphthylene	benzo[<i>j</i>]fluoranthene
acenaphthene	benzo[<i>k</i>]fluoranthene
1,6,7-trimethylnaphthalene	benzo[<i>e</i>]pyrene
fluorene	benzo[<i>a</i>]pyrene
phenanthrene	perylene
anthracene	
indeno[1,2,3- <i>cd</i>]pyrene	
1-methylphenanthrene	dibenz[<i>a,h</i>]anthracene
fluoranthene	benzo[<i>ghi</i>]perylene

Table 2. Diskette Data File Format (File: SED12.*)

NIST Intercomparison Exercise Program for Organics in the Marine Environment
NIST QA Program
Sample: QA03SED12 - Marine Sediment XII

Please fill in all blanks; Use requested units of concentration; Report results as if 3 figures were significant
DO NOT INSERT ROWS OR COLUMNS WITHIN THIS TABLE. DO NOT MOVE CELLS.

- If necessary, add additional data/information at the end of the table.

- Use one of the following if no concentration is reported for an analyte:

NA = Not analyzed/determined; <"conc" = <detection limit conc.; Other = other, explain in a note at end of table
(DL = "below detection limit" may be used, but <"conc", e.g., <8, is preferable.)

Do not use parentheses or negative numbers to indicate "less than detection limit".

Reporting Date (m/d/y): _____
Laboratory: _____
Submitted by: _____

BRIEF DESCRIPTION OF PROCEDURES USED:

Approximate amount of sample extracted: Sediment XII _____ g, wet basis; SRM 1941b _____ g, dry basis

Method used for determining percentage water: _____

Were "wet" or "dry" samples extracted? Sediment XII _____ SRM 1941b _____

Extraction method: _____
Extraction solvent: _____
Extraction time: _____
Extraction - other: _____

Sample extract cleanup method: _____

Analytical method used (e.g., GC-FID, GC-ECD):

	Analyt. Instr.	Column Phase	Col. Length, m	Col. i.d., mm	Col. film thickness, μ m
PAH	_____	_____	_____	_____	_____
Pesticides	_____	_____	_____	_____	_____
PCB Congeners	_____	_____	_____	_____	_____

Method of quantitation (IS = internal standard, ES = external standard):

PAH	_____
Pesticides	_____
PCB Congeners	_____

IF internal standard method was used, please complete the following section:

Identity of internal standards/surrogates used that were:

Added PRIOR to extraction of sample:

PAH	_____
Pesticides	_____
PCB Congeners	_____

Added after extraction/cleanup and JUST PRIOR to chromatographic analysis:

PAH	_____
Pesticides	_____
PCB Congeners	_____

Any others? Added at what point in analyses: _____

PAH	_____
Pesticides	_____
PCB Congeners	_____

IS/surrogate standards used for quantitation calculations were:

_____ those added prior to extraction
_____ those added after extraction/cleanup and just prior to chromatographic analysis

If the IS/surrogates added after extraction/cleanup were used for quantitation,
were results corrected for percent recovery?

Percent recovery range: _____
PAH _____
Pesticides _____
PCB Congeners _____

Calibration Curve

	Points	Conc. Range	Analytes outside of calibration curve calibration range
PAH			
Pesticides			
PCB Congeners			

Were PCB congeners separated from pesticides prior to GC? _____

Please note any differences in procedures used for SRM 1941b analyses from those for Marine Sediment XII described above:

RESULTS:

PERCENT WATER & total organic carbon, TOC (List each result if determined more than once. Enter results as a number, for example 90.0.
DO NOT change format of cell to percent.)

	Sediment XII (percent)	Sediment XII (percent)	Sediment XII (percent)	SRM 1941b (percent)	SRM 1941b (percent)	SRM 1941b (percent)
Water						
TOC						
PAH ANALYSES	Sediment XII Batch A Sample 1	Sediment XII Batch B Sample 2	Sediment XII Batch C Sample 3	SRM 1941b Batch A Sample 1	SRM 1941b Batch B Sample 2	SRM 1941b Batch C Sample 3
Analyst (Initials)						
Date(s) of measurements (m/d/y)						
Sample Jar number						
	Sediment XII Sample 1 (ng/g dry wt)	Sediment XII Sample 2 (ng/g dry wt)	Sediment XII Sample 3 (ng/g dry wt)	SRM 1941b Sample 1 (ng/g dry wt)	SRM 1941b Sample 2 (ng/g dry wt)	SRM 1941b Sample 3 (ng/g dry wt)
naphthalene						
2-methylnaphthalene						
1-methylnaphthalene						
biphenyl						
2,6-dimethylnaphthalene						
acenaphthylene						
acenaphthene						
1,6,7-trimethylnaphthalene						
fluorene						
phenanthrene						
anthracene						
1-methylphenanthrene						
fluoranthene						
pyrene						
benz[a]anthracene						
chrysene						
triphenylene						
benzo[b]fluoranthene						
benzo[j]fluoranthene						
benzo[k]fluoranthene						
benzo[e]pyrene						
benzo[a]pyrene						
perylene						
indeno[1,2,3-cd]pyrene						
dibenz[a,h]anthracene						
benzo[ghi]perylene						

PESTICIDE ANALYSES

	Sediment XII Batch A Sample 1	Sediment XII Batch B Sample 2	Sediment XII Batch C Sample 3	SRM 1941b Batch A Sample 1	SRM 1941b Batch B Sample 2	SRM 1941b Batch C Sample 3
Analyst (Initials)						
Date(s) of measurements (m/d/y)						
Sample Jar number						
	Sediment XII Sample 1 (ng/g dry wt)	Sediment XII Sample 2 (ng/g dry wt)	Sediment XII Sample 3 (ng/g dry wt)	SRM 1941b Sample 1 (ng/g dry wt)	SRM 1941b Sample 2 (ng/g dry wt)	SRM 1941b Sample 3 (ng/g dry wt)
alpha-HCH (a-BHC)						
hexachlorobenzene						
gamma-HCH (g-BHC,lindane)						
beta-HCH (b-BHC)						
heptachlor						
aldrin						
heptachlor epoxide						
oxychlordane						
gamma-chlordane						
2,4'-DDE						
endosulfan I						
cis-chlordane (alpha-chlordane)						
trans-nonachlor						
dieldrin						
4,4'-DDE						
2,4'-DDD						
endrin						
endosulfan II						
4,4'-DDD						
2,4'-DDT						
cis-nonachlor						
4,4'-DDT						
mirex						
endosulfan sulfate						
chlorpyrifos						

PCB CONGENER ANALYSES

	Sediment XII Batch A Sample 1	Sediment XII Batch B Sample 2	Sediment XII Batch C Sample 3	SRM 1941b Batch A Sample 1	SRM 1941b Batch B Sample 2	SRM 1941b Batch C Sample 3
Analyst (Initials)						
Date(s) of measurements (m/d/y)						
Sample Jar number						
	Sediment XII Sample 1 (ng/g dry wt)	Sediment XII Sample 2 (ng/g dry wt)	Sediment XII Sample 3 (ng/g dry wt)	SRM 1941b Sample 1 (ng/g dry wt)	SRM 1941b Sample 2 (ng/g dry wt)	SRM 1941b Sample 3 (ng/g dry wt)
PCB 8						
PCB 18						
PCB 28						
PCB 31						
PCB 44						
PCB 49						
PCB 52						
PCB 66						
PCB 95						
PCB 99						
PCB 101						
PCB 105						
PCB 118						
PCB 128						
PCB 138						
PCB 149						
PCB 153						
PCB 156						
PCB 170						
PCB 180						
PCB 187						
PCB 194						
PCB 195						
PCB 206						
PCB 209						

(Any additional data/information should be added here.)

Appendix C: Laboratory Notes Accompanying Data, Mussel Tissue XI

Lab	Additional notes for Mussel Tissue XI						
1b		MT XI Sample 1 (ng/g wet wt)	MT XI Sample 2	MT XI Sample 3	SRM 1974b Sample 1 (ng/g wet wt)	SRM 1974b Sample 2	SRM 1974b Sample 3
	PCB 151	1.38	1.40	1.39	1.76	1.76	1.77
	2,3,5-trimethylnaphthalene	2.91	2.81	2.68	0.566	0.483	0.487
	3-methylphenanthrene	7.12	7.20	7.17	1.09	1.32	1.35
	2-methylphenanthrene	8.81	8.94	9.10	1.44	1.52	1.60
	9-methylphenanthrene	4.59	4.57	4.69	0.979	1.00	1.09
	1-methylphenanthrene w/ 4-	4.89	5.05	4.83	1.06	0.850	0.938
	benzo[ghi]fluoranthene	2.79	2.71	2.58	2.36	2.29	2.35
	benzo[c]phenanthrene	2.85	2.65	2.67	1.98	1.91	1.91
	benzo[C]chrysene w/ di[a,j]ant	0.757	0.616	0.596	0.789	0.756	0.804
	dibenz[a,c]anthracene	1.82	1.75	1.73	1.75	1.85	2.06
	benzo[b]chrysene	0.521	0.408	0.355	0.470	0.935	0.755
	picene	0.864	0.813	0.687	0.755	0.928	0.977
	benzo[a]fluoranthene	0.851	0.786	0.759	0.784	1.01	0.970
	possible coelution of another compound with 2,4'-DDT in both tissue 11 and 1974b 4,4'-DDD seems to have degraded in samples, may have lost in clean-up dibenz[a,c]anthracene not a single peak in tissue 11 or SRM 1974b on DB-17MS column						
1c		MT XI Sample 1 (ng/g wet wt)	MT XI Sample 2	MT XI Sample 3	SRM 1974b Sample 1 (ng/g wet wt)	SRM 1974b Sample 2	SRM 1974b Sample 3
	PCB 29	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
	PCB 45	0.545	0.527	0.443	0.466	0.589	0.427
	PCB 63	0.533	0.523	0.667	0.395	0.434	0.400
	PCB 74	3.26	3.34	3.18	3.26	3.34	3.18
	PCB 70	5.61	5.68	5.48	5.61	5.68	5.48
	PCB 56	1.34	1.13	1.13	2.90	2.71	2.73
	PCB 92	2.37	2.23	2.23	2.17	2.43	2.07
	PCB 87	4.39	4.47	4.23	4.39	4.47	4.23
	PCB 154	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
	PCB 110	6.73	6.44	6.55	9.47	9.24	8.76
	PCB 151	1.72	1.66	1.56	1.72	1.66	1.56
	PCB 107	0.634	0.655	0.618	0.773	0.788	0.744
	PCB 146	1.25	1.21	1.16	1.53	1.50	1.40
	PCB 132	1.66	1.52	1.39	1.95	1.76	1.66
	PCB 163	1.15	1.12	1.12	1.74	1.67	1.56
	PCB 158	0.679	0.646	0.621	0.800	0.753	0.705
	PCB 183	0.994	0.956	0.927	1.14	1.10	1.02
	PCB 174	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
	PCB 201	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
	PCB 157	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
	PCB 193	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
2	PAHs: Chrysene and triphenylene co-elute - reported chrysene values include contribution from triphenylene Benzo(b)fluoranthene and benzo(j)fluoranthene co-elute - reported benzo(b)fluoranthene values include contribution from benzo(j)fluoranthene						
4	1) "Other" o,p'-DDE coelution issues 2) Normal Method Report Limit is 5.0						
8	other = interference						
12		MT XI Sample 1 (ng/g wet wt)	MT XI Sample 2	MT XI Sample 3	SRM 1974b Sample 1 (ng/g wet wt)	SRM 1974b Sample 2	SRM 1974b Sample 3
	chrysene/triphenylene	15	15.8	14.1	10.6	9.88	8.81
	benzo(b+a)fluoranthene	9.78	10.4	9.18	10.9	9.57	8.06
	1-methylphenanthrene/1-methylar	3.05	3.11	2.81	1.15	1.05	0.913
	o,p-DDT & p,p-DDD	4.58	4.73	4.87	5.09	4.85	4.44
	PCBs						
	8/5	0.3	0.245	0.238	0.421	0.581	0.29
	28/31	5.01	4.82	4.26	5.95	6.53	4.95
	95/121/88	3.84	3.75	3.35	5.56	5.61	4.4
	66/80	4.65	4.44	4.09	6.29	6.2	4.89
	149/139	4.74	4.68	4.27	7.13	7.11	5.57
	118/106	7.78	7.62	7.02	11.9	11.9	9.68
	153/132	6.23	6.16	5.76	9.93	9.53	7.78
	105/127	3.1	3.07	2.75	4.67	4.57	3.62
	138/160/163/158	8.22	8.07	7.27	12.6	12.3	10
	187/182	1.91	1.85	1.68	2.7	2.67	2.16
	128/167	1.19	1.14	1.04	1.97	1.97	1.64
	170/190	DL	DL	DL	0.256	0.256	0.197
	Anthracene, fluorene, and biphenyl were not quantified due to background interference.						

15	Coelutions: Triphenylene coelutes with chrysene; benzo[j]fluoranthene coelutes with benzo[k]fluoranthene; dibenz[a,c]anthracene coelutes with dibenz[a,h]anthracene. PCB 90 coelutes with PCB 101; PCBs 163 and 164 coelute with PCB 138; PCB 132 coelutes with PCB 153; PCBs 159 and 182 coelute with PCB 187.																																																																																																																																					
	<table><tr><th></th><th>MT XI Sample 1 (ng/g wet wt)</th><th>MT XI Sample 2</th><th>MT XI Sample 3</th><th>SRM 1974b Sample 1 (ng/g wet wt)</th><th>SRM 1974b Sample 2</th><th>SRM 1974b Sample 3</th></tr><tr><td>dibenzothiophene</td><td>1.37</td><td>1.39</td><td>1.43</td><td>0.324</td><td>0.304</td><td>0.299</td></tr><tr><td>retene</td><td>2.28</td><td>2.08</td><td>2.14</td><td>0.885</td><td>0.914</td><td>0.929</td></tr><tr><td>PCB 17</td><td>0.911</td><td>0.868</td><td>0.834</td><td>0.970</td><td>1.01</td><td>0.928</td></tr><tr><td>PCB 33</td><td><1.12</td><td>0.911</td><td>0.888</td><td><1.12</td><td><0.881</td><td><1.04</td></tr><tr><td>PCB 70</td><td>6.95</td><td>6.37</td><td>6.25</td><td>7.63</td><td>7.25</td><td>7.46</td></tr><tr><td>PCB 74</td><td>3.89</td><td>3.8</td><td>3.76</td><td>4.30</td><td>4.24</td><td>4.30</td></tr><tr><td>PCB 82</td><td>1.01</td><td>0.957</td><td>0.981</td><td>1.18</td><td>1.15</td><td>1.19</td></tr><tr><td>PCB 87</td><td>3.70</td><td>3.78</td><td>3.68</td><td>4.62</td><td>4.55</td><td>4.66</td></tr><tr><td>PCB 110</td><td>8.11</td><td>8.09</td><td>7.88</td><td>10.3</td><td>10.1</td><td>10.3</td></tr><tr><td>PCB 151</td><td>1.34</td><td>1.42</td><td>1.36</td><td>1.73</td><td>1.76</td><td>1.75</td></tr><tr><td>PCB 158</td><td>0.886</td><td>0.874</td><td>0.838</td><td>1.13</td><td>1.08</td><td>1.13</td></tr><tr><td>PCB 171</td><td>0.454</td><td>0.425</td><td>0.426</td><td>0.543</td><td>0.525</td><td>0.541</td></tr><tr><td>PCB 177</td><td>0.815</td><td>0.823</td><td>0.818</td><td>1.06</td><td>1.05</td><td>1.07</td></tr><tr><td>PCB 183</td><td>1.02</td><td>1.06</td><td>1.01</td><td>1.22</td><td>1.22</td><td>1.26</td></tr><tr><td>PCB 191</td><td><0.431</td><td><0.254</td><td><0.262</td><td><0.431</td><td><0.338</td><td><0.398</td></tr><tr><td>PCB 199</td><td><0.850</td><td><0.500</td><td><0.518</td><td><0.850</td><td><0.668</td><td><0.786</td></tr><tr><td>PCB 205</td><td><0.431</td><td><0.254</td><td><0.262</td><td><0.431</td><td><0.339</td><td><0.399</td></tr><tr><td>PCB 208</td><td><0.431</td><td><0.254</td><td><0.262</td><td><0.431</td><td><0.338</td><td><0.398</td></tr></table>		MT XI Sample 1 (ng/g wet wt)	MT XI Sample 2	MT XI Sample 3	SRM 1974b Sample 1 (ng/g wet wt)	SRM 1974b Sample 2	SRM 1974b Sample 3	dibenzothiophene	1.37	1.39	1.43	0.324	0.304	0.299	retene	2.28	2.08	2.14	0.885	0.914	0.929	PCB 17	0.911	0.868	0.834	0.970	1.01	0.928	PCB 33	<1.12	0.911	0.888	<1.12	<0.881	<1.04	PCB 70	6.95	6.37	6.25	7.63	7.25	7.46	PCB 74	3.89	3.8	3.76	4.30	4.24	4.30	PCB 82	1.01	0.957	0.981	1.18	1.15	1.19	PCB 87	3.70	3.78	3.68	4.62	4.55	4.66	PCB 110	8.11	8.09	7.88	10.3	10.1	10.3	PCB 151	1.34	1.42	1.36	1.73	1.76	1.75	PCB 158	0.886	0.874	0.838	1.13	1.08	1.13	PCB 171	0.454	0.425	0.426	0.543	0.525	0.541	PCB 177	0.815	0.823	0.818	1.06	1.05	1.07	PCB 183	1.02	1.06	1.01	1.22	1.22	1.26	PCB 191	<0.431	<0.254	<0.262	<0.431	<0.338	<0.398	PCB 199	<0.850	<0.500	<0.518	<0.850	<0.668	<0.786	PCB 205	<0.431	<0.254	<0.262	<0.431	<0.339	<0.399	PCB 208	<0.431	<0.254	<0.262	<0.431	<0.338	<0.398
	MT XI Sample 1 (ng/g wet wt)	MT XI Sample 2	MT XI Sample 3	SRM 1974b Sample 1 (ng/g wet wt)	SRM 1974b Sample 2	SRM 1974b Sample 3																																																																																																																																
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16	Co-eluters: PCB18/30, PCB-28/20/21/33, PCB-44/47/65, PCB-49/69, PCB-52/73/43, PCB-99/83/112, PCB-101/90/113, PCB-128/166, PCB-138/164/163/129, PCB-147/149, PCB-153/168, PCB-156/157, PCB-180/193																																																																																																																																					
18	* The results for Chrysene is a total result for Chrysene and Triphenylene which coelute. *The results for Benzo(k)Fluoranthene is a total result for Benzo(k)Fluoranthene and Benzo(j)Fluoranthene which coelute. *The results for Dibenz(a,h)anthracene is a total result for Dibenz(a,c) & (a,h)anthracene, which coelute. *The results PCB 28 is the total result of PCB 28 and PCB 31 which coelute.																																																																																																																																					
19	PAH Internal Standards d8-naphthalene, d8-acenaphthylene, d10-acenaphthene, d10-fluorene, d10-phenanthrene, d10-anthracene, d10-fluoranthene d10-pyrene, d12-benz(a)anthracene, d12-chrysene, d12-benzo(b)fluoranthene, d12-benzo(k)fluoranthene, d12-benzo(e)pyrene d12-benzo(a)pyrene, d12-perylene, d12-indeno(1,2,3-cd)pyrene, d12-dibenz(a,h)anthracene, d12-benzo(g,h,i)perylene Other (1) - Under our chromatographic conditions, chrysene and triphenylene co-elute. They are reported as the sum, based upon the response factor of chrysene. Other (2) - Under our chromatographic conditions, benzo [j] and [k] fluoranthene co-elute. They are reported as the sum, based upon the response factor of b[k]f. <table><tr><th></th><th>MT XI Sample 1 (ng/g wet wt)</th><th>MT XI Sample 2</th><th>MT XI Sample 3</th><th>SRM 1974b Sample 1 (ng/g wet wt)</th><th>SRM 1974b Sample 2</th><th>SRM 1974b Sample 3</th></tr><tr><td>Chrysene+Triphenylene</td><td>18.9</td><td>19.7</td><td>19.8</td><td>12.2</td><td>11.5</td><td>11.9</td></tr><tr><td>Benzo(j+k)fluoranthene</td><td>6.27</td><td>5.74</td><td>6.31</td><td>5.50</td><td>6.94</td><td>6.76</td></tr><tr><td>Dibenzothiophene</td><td>0.950</td><td>1.16</td><td>1.04</td><td>0.309</td><td>0.651</td><td>0.448</td></tr><tr><td>PCB 29</td><td>0.576</td><td>0.788</td><td>0.754</td><td>0.937</td><td>0.814</td><td>0.797</td></tr><tr><td>PCB 50</td><td>4.31</td><td>4.5</td><td>4.68</td><td>4.8</td><td>4.84</td><td>4.8</td></tr><tr><td>PCB 87</td><td>3.52</td><td>3.56</td><td>3.54</td><td>4.5</td><td>4.62</td><td>4.6</td></tr><tr><td>PCB 104</td><td>0.281</td><td>0.406</td><td>0.33</td><td>0.293</td><td>0.417</td><td>0.43</td></tr><tr><td>PCB 126</td><td>0.683</td><td>0.813</td><td>0.948</td><td>1.01</td><td>1.06</td><td>1.09</td></tr><tr><td>PCB 154</td><td>4.56</td><td>4.62</td><td>4.66</td><td>5.94</td><td>6.17</td><td>6.19</td></tr><tr><td>PCB 188</td><td>1.16</td><td>1.32</td><td>1.44</td><td>1.88</td><td>1.81</td><td>1.93</td></tr><tr><td>PCB 201</td><td>0.35</td><td>0.355</td><td>0.426</td><td>0.496</td><td>0.481</td><td>0.495</td></tr></table>		MT XI Sample 1 (ng/g wet wt)	MT XI Sample 2	MT XI Sample 3	SRM 1974b Sample 1 (ng/g wet wt)	SRM 1974b Sample 2	SRM 1974b Sample 3	Chrysene+Triphenylene	18.9	19.7	19.8	12.2	11.5	11.9	Benzo(j+k)fluoranthene	6.27	5.74	6.31	5.50	6.94	6.76	Dibenzothiophene	0.950	1.16	1.04	0.309	0.651	0.448	PCB 29	0.576	0.788	0.754	0.937	0.814	0.797	PCB 50	4.31	4.5	4.68	4.8	4.84	4.8	PCB 87	3.52	3.56	3.54	4.5	4.62	4.6	PCB 104	0.281	0.406	0.33	0.293	0.417	0.43	PCB 126	0.683	0.813	0.948	1.01	1.06	1.09	PCB 154	4.56	4.62	4.66	5.94	6.17	6.19	PCB 188	1.16	1.32	1.44	1.88	1.81	1.93	PCB 201	0.35	0.355	0.426	0.496	0.481	0.495																																																	
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20	PCB101 coelutes with PCB90 PCB153 coelutes with PCB132 and 168 PCB170 coelutes with PCB190 PCB 8 coelutes with PCB 5 PCB 195 coelutes with PCB208 <symbol refers to values less than our MDL the chrysene number is the sum of chrysene and triphenylene, we cannot resolve the two we do not analyze for benzo(j)fluoranthene because it coelutes with benzo(b)fluoranthene Tissue MDL values are high due to limited sample volume and reporting data on a wet weight basis. Our MDLs are based on 13.0g wet weight of mussel. Therefore MDLs reported here are approximately 2X higher than those on 13 g wet. Additionally, sample PAH concentrations are low which is compounded by the small sample volume.																																																																																																																																					

Appendix D: Laboratory Notes Accompanying Data, Marine Sediment XII

Lab	Additional notes for Sediment XII					
1b	SED XII	SED XII	SED XII	SRM 1941b	SRM 1941b	SRM 1941b
	Sample 1	Sample 2	Sample 3	Sample 1	Sample 2	Sample 3
	(ng/g dry wt)			(ng/g dry wt)		
PCB 151	5.75	6.09	5.52	1.19	1.16	1.27
2,3,5-trimethylnaphthalene	24.3	26.9	26.3	29.8	30.0	29.7
3-methylphenanthrene	69.8	74.6	75.3	92.3	95.1	94.4
2-methylphenanthrene	85.3	90.6	91.2	103	107	106
9-methylphenanthrene	49.2	52.1	52.9	55.2	56.8	55.9
1-methylphenanthrene w/ 4-	69.5	74.5	75.9	77.7	78.7	77.4
benzo[ghi]fluoranthene	95.5	99.8	97.9	61.8	63.6	61.9
benzo[c]phenanthrene	82.4	86.5	93	61.1	62.1	64.5
benzo[C]chrysene w/ di[a,j]ant	107?	139	151	77.2	78.4	84.4
dibenz[a,c]anthracene	74.2	75.3	83.9	44.1	45.5	54.8
benzo[b]chrysene	94.1	111	119	64.7	72.2	80.5
picene	48.6?	107	119	41.2	42.1	31.4
benzo[a]fluoranthene	46.9?	116	123	69.5	74.6	73.5
possible coelution of another compound with 2,4'-DDT in both sed12 and in 1941b						
4,4'-DDD seems to have degraded in samples, may have lost in clean-up						
dibenz[a,c]anthracene is not a single peak in sed 12 and in 1941b on DB-17MS column						
1c	SED XII	SED XII	SED XII	SRM 1941b	SRM 1941b	SRM 1941b
	Sample 1	Sample 2	Sample 3	Sample 1	Sample 2	Sample 3
	(ng/g dry wt)			(ng/g dry wt)		
PCB 29	<0.3	<0.3	<0.3	NA	<0.3	<0.3
PCB 63	<0.3	<0.3	<0.3	NA	<0.3	<0.3
PCB 74	2.90	3.04	3.05	NA	1.83	2.04
PCB 70	7.25	6.64	6.77	NA	4.15	4.24
PCB 56	3.91	3.67	3.51	NA	2.65	2.85
PCB 92	3.84	4.04	4.45	NA	0.970	0.978
PCB 87	12.5	11.3	12.3	NA	1.68	1.43
PCB 110	24.1	23.3	25.5	NA	4.70	4.40
PCB 154	<0.3	<0.3	<0.3	NA	<0.3	<0.3
PCB 82	2.41	2.45	2.48	NA	0.419	0.432
PCB 151	6.08	5.65	6.14	NA	1.08	1.12
PCB 107	1.26	1.00	1.21	NA	0.461	0.476
PCB 146	3.37	3.02	3.44	NA	0.829	0.887
PCB 105	7.05	6.48	7.29	NA	1.47	1.25
PCB 163	4.90	4.56	5.35	NA	0.883	0.981
PCB 158	2.45	2.19	2.53	NA	0.362	0.322
PCB 183	3.85	3.53	3.72	NA	1.04	1.07
PCB 174	5.29	5.10	5.21	NA	1.02	1.08
PCB 201	2.39	2.17	2.36	NA	0.678	0.740
PCB 157	0.543	0.535	0.445	NA	<0.3	<0.3
PCB 193	0.764	0.528	0.649	NA	<0.3	<0.3
2	PAHs: Chrysene and triphenylene co-elute - reported chrysene values include contribution from triphenylene Benzo(b)fluoranthene and benzo(j)fluoranthene co-elute - reported benzo(b)fluoranthene values include contribution from benzo(j)fluoranthene					
3	SRM1941a was used , not 1941b SEDXII was oven-"dried" at 37C for 17 hours prior to extraction					
4	PAH analysis: concentrations reported below 150ng/g for NIST sediments are considered estimated values because they are below the method reporting level based on an 8g sample weight. Concentrations reported below 125ng/g for the SRMs are considered estimated values due to a 10g sample weight.					
9	SRM 1941b, Sample 3 - Data unuseable due to lab accident.					
12	SED XII	SED XII	SED XII			
	Sample 1	Sample 2	Sample 3			
	(ng/g dry wt)					
chrysene/triphenylene	1260	1260	1200			
benzo(b+a)fluoranthene	1300	1400	1370			
1-methylphenanthrene/1-methylar	94.4	100	97.4			
o,p-DDT & p,p-DDD	45.9	46.7	45.6			
PCBs						
8/5	1.07	1.22	1.2			
28/31	7	7.41	7.04			
95/121/88	25.2	22.8	22.7			
66/80	8.21	8	7.78			
149/139	36.1	33.6	34			
118/106	0.667	0.619	0.594			
153/132	57.7	53	53.6			
105/127	14.4	13	13.1			
138/160/163/158	58.1	54	55.3			
187/182	13.3	12.9	12.6			
128/167	10.5	9.73	9.83			
170/190	13.2	12.5	12.7			

15	Coelutions: Triphenylene coelutes with chrysene; benzo(j)fluoranthene coelutes with benzo(k)fluoranthene; dibenz[a,c]anthracene coelutes with dibenz[a,h]anthracene. PCB 90 coelutes with PCB 101; PCBs 163 and 164 coelute with PCB 138; PCB 132 coelutes with PCB 153; PCBs 159 and 182 coelute with PCB 187.																																																																																																																																					
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16	Co-eluters: PCB18/30, PCB-28/20/21/33, PCB-44/47/65, PCB-49/69, PCB-52/73/43, PCB-99/83/112, PCB-101/90/113, PCB-128/166, PCB-138/164/163/129, PCB-147/149, PCB-153/168, PCB-156/157, PCB-180/193																																																																																																																																					
17	chrysene co-elutes with triphenylene benzo(j)fluoranthene co-elutes with benzo(k)fluoranthene																																																																																																																																					
18	* The results for Chrysene is a total result for Chrysene and Triphenylene which coelute. *The results for Benzo(k)Fluoranthene is a total result for Benzo(k)Fluoranthene and Benzo(j)Fluoranthene which coelute. *The results for Dibenz(a,h)anthracene is a total result for Dibenz(a,c) & (a,h)anthracene, which coelute. *The results PCB 28 is the total result of PCB 28 and PCB 31 which coelute.																																																																																																																																					
19	PAH Internal Standards d8-naphthalene, d8-acenaphthylene, d10-acenaphthene, d10-fluorene, d10-phenanthrene, d10-anthracene, d10-fluoranthene d10-pyrene, d12-benz(a)anthracene, d12-chrysene, d12-benzo(b)fluoranthene, d12-benzo(k)fluoranthene, d12-benzo(e)pyrene d12-benzo(a)pyrene, d12-perylene, d12-indeno(1,2,3-cd)pyrene, d12-dibenz(a,h)anthracene, d12-benzo(g,h,i)perylene Other (1) - Under our chromatographic conditions, chrysene and triphenylene co-elute. They are reported as the sum, based upon the response factor of chrysene. Other (2) - Under our chromatographic conditions, benzo [j] and [k] fluoranthene co-elute. They are reported as the sum, based upon the response factor of b[k]f. Other (3) - Under our chromatographic conditions, dibenz [a,h] and [a,c] anthracene co-elute. They are reported as the sum, based upon the response factor of dibenz(a,h)anthracene. <table><tr><th></th><th>SED XII Sample 1</th><th>SED XII Sample 2</th><th>SED XII Sample 3</th><th>SRM 1941b Sample 1</th><th>SRM 1941b Sample 2</th><th>SRM 1941b Sample 3</th></tr><tr><th></th><th>(ng/g dry wt)</th><th></th><th></th><th>(ng/g dry wt)</th><th></th><th></th></tr><tr><td>chrysene+triphenylene</td><td>1040</td><td>1060</td><td>1170</td><td>505</td><td>508</td><td>504</td></tr><tr><td>benzo[j+k]fluoranthene</td><td>1260</td><td>923</td><td>1270</td><td>517</td><td>498</td><td>474</td></tr><tr><td>dibenzothiophene</td><td>39.4</td><td>44.7</td><td>50.0</td><td>58.0</td><td>66.7</td><td>63.1</td></tr><tr><td>dibenz[a,h+a,c]anthracene</td><td>164</td><td>136</td><td>111</td><td>120</td><td>105</td><td>125</td></tr><tr><td>PCB 29</td><td>0.314</td><td>0.319</td><td>0.266</td><td>0.641</td><td>1.19</td><td>1.52</td></tr><tr><td>PCB 50</td><td>1.93</td><td>3.09</td><td>2.29</td><td>0.908</td><td>1.37</td><td>1.2</td></tr><tr><td>PCB 77</td><td>60.9</td><td>66</td><td>62.9</td><td>5.09</td><td>5.88</td><td>5.55</td></tr><tr><td>PCB 87</td><td>14.3</td><td>13.6</td><td>13.1</td><td>0.952</td><td>1.13</td><td>1.25</td></tr><tr><td>PCB 126</td><td>4.77</td><td>5.65</td><td>4.73</td><td>0.658</td><td>0.777</td><td>0.96</td></tr><tr><td>PCB 154</td><td>18.3</td><td>15.4</td><td>14.9</td><td>3.67</td><td>3.59</td><td>3.86</td></tr><tr><td>PCB 188</td><td>6.21</td><td>6.96</td><td>5.64</td><td>0.378</td><td>0.472</td><td>0.42</td></tr><tr><td>PCB 201</td><td>3.7</td><td>3.93</td><td>2.92</td><td>0.419</td><td>0.541</td><td>0.472</td></tr></table>		SED XII Sample 1	SED XII Sample 2	SED XII Sample 3	SRM 1941b Sample 1	SRM 1941b Sample 2	SRM 1941b Sample 3		(ng/g dry wt)			(ng/g dry wt)			chrysene+triphenylene	1040	1060	1170	505	508	504	benzo[j+k]fluoranthene	1260	923	1270	517	498	474	dibenzothiophene	39.4	44.7	50.0	58.0	66.7	63.1	dibenz[a,h+a,c]anthracene	164	136	111	120	105	125	PCB 29	0.314	0.319	0.266	0.641	1.19	1.52	PCB 50	1.93	3.09	2.29	0.908	1.37	1.2	PCB 77	60.9	66	62.9	5.09	5.88	5.55	PCB 87	14.3	13.6	13.1	0.952	1.13	1.25	PCB 126	4.77	5.65	4.73	0.658	0.777	0.96	PCB 154	18.3	15.4	14.9	3.67	3.59	3.86	PCB 188	6.21	6.96	5.64	0.378	0.472	0.42	PCB 201	3.7	3.93	2.92	0.419	0.541	0.472																																			
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20	the chrysene number is the sum of chrysene and triphenylene, we cannot resolve the two we can not separate benzo(j)fluoranthene because under our conditions it coelutes with benzo(b)fluoranthene <symbol refers to values less than our MDL PCB101 coelutes with PCB90 PCB153 coelutes with PCB132 and 168 PCB170 coelutes with PCB190 PCB8 coelutes with PCB5 PCB195 coelutes with PCB208 Total carbon and total organic carbon are measured independently in oven-dried sediments and soils using a LECO CR-412 Carbon Determinator																																																																																																																																					

Appendix E: Laboratory Methods Used, Mussel Tissue XI

Lab #	Reported	g extracted QA03TIS11	g extracted SRM 1974b	% water Determination	Extraction Method	Extraction Solvent	Extraction Time	Extraction other
1a	7/12/2003	6 wet	6 wet	freeze-dry	PFE	dichloromethane	3 cycles each 5 min	temp = 100 °C; pressure 2000 psi; 3 static cycles / sample
1b	10/6/2003	12 wet	10 wet	not analyzed	Soxhlet	dichloromethane	overnight	
1c	10/15/2003	10 wet	10 wet	freeze-dry	PFE	dichloromethane	3 cycles each 5 min	temp = 100 °C; pressure 2000 psi; 3 static cycles / sample
2	6/17/2003	5 wet	5 wet	not analyzed	Soxhlet	dichloromethane	16 h (PCBs); 2 h (PAHs)	
4	7/3/2003	10 wet	10 wet	not analyzed	Soxhlet	dichloromethane	12 h	
7	7/2/2003	5 wet	5 wet	approx 2 g dried at 70 °C for 48 h	PFE	dichloromethane	40 min	
8	7/10/2003	6.008 wet	6.011 wet	105 °C until constant weight	polytron	dichloromethane	3 x 2.0 min each	filtered on glass fiber-filters (1.2 µm pore size) during extraction
9	7/11/2003	10 wet	10 wet	EPA 160.3	SW-846 Method 3540B, Sonication	dichloromethane:acetone (1:1)	4 x 2 min	
11	7/11/2003	10.3 wet	8.2 wet	drying and weighing	grinding with sodium sulfate	dichloromethane	3 x 3 min	
12	7/16/2003	5 wet	5 wet	1 g dried at 60 °C for 24h	ultrasonic probe	dichloromethane	3 x 3 min	
14	7/21/2003	1 wet		2 g dried at 100 °C for 24h	Soxhlet	dichloromethane	18 h	
15	8/13/2003	2.3 wet	2.3 wet	120 °C for 24h	PFE	dichloromethane	16 min	temp = 100 °C; pressure 2000 psi
16	8/8/2003	1 g wet	1 g wet	overnight at 100 °C	PFE	dichloromethane:hexane (1:1)	3 x 10 min static	
17	7/10/2003	10 wet	5 wet	105 °C for at least 24h	NOAA NS&T	dichloromethane	2 x 2 min using tissuemizer and 1 x 30 min on shaker table	
18	8/8/2003	5.29 wet	5.27 wet	105 °C oven	PFE	dichloromethane:acetone	15 min	
19	8/22/2003	5 wet	5 wet	120 °C oven	PFE	dichloromethane	3 x 5 min	sodium sulfate added prior to extraction
20	8/29/2003	5 wet	5 wet	105 °C until constant weight	PFE	dichloromethane	13 min	temp = 100 °C; pressure 2000 psi; 2 static cycles / sample; reduce to 2 to 3 mL using water bath

Lab #	Sample extract cleanup method	PCBs and Pesticides Separated?	Method of quantitation
1a	gel permeation chromatography (GPC); silica solid phase extraction (SPE) column; condition and elute with 10 % dichloromethane in hexane	no	IS
1b	GPC; silica SPE column; condition and elute with 10 % dichloromethane in hexane (2 x 10 mL) 1g florisil column; elute with 10.5 mL of dichloromethane:hexane (1:1); following analysis for PAHs fractionate on 1 g silica column - 1st fraction eluted with 5 mL hexane; 2nd fraction with 6 mL of dichloromethane:hexane (1:1)	no	IS
1c	PCBs - GPC (EPA 3640), florisil (EPA 3620), sulfuric acid (EPA 3665); PAHs - silica gel (EPA 3630)	yes	IS
2	GPC; Al/Si	no	PAH - IS; PCBs- ES
4	GPC and florisil	yes	ES
7	GPC; 7.3% deactivated silica gel for fractionation and clean-up	no	ES
8	GPC; 7.3% deactivated silica gel for fractionation and clean-up	yes	IS
9	PAH- EPA SW846 3640A (GPC); Pesticides - EPA SW846 3620B (florisil); PCBs - EPA SW846 3620B (florisil) and 3665 (sulfuric acid)	no	IS for PAH; ES for pesticides and PCBs
11	silica gel/ alumina and phenogel	no	IS
12	GPC (OI analytical Envirobeads S-X3 temperature 19 °C)	no	IS for PAH and PCBs; ES for pesticides
14	gravitational alumina column; gravitational florisil chromatography	no	IS
15	gravity flow column with silica and neutral alumina, followed by HPLC-SEC to elute AHH/CH fraction	no	IS
16	pesticides - GPC and multiple silica gel cleanup columns; PCBs - GPC followed by acid/base silica, alumina, and light acid/base silica columns		IS
17	extracts concentrated; poured through 40g - 6% deactivated super B alumina column- eluted with dichloromethane and concentrated for HPLC/GPC fractionation	no	IS
18	silica gel	no	IS
19	GPC (SDVB column w/ dichloromethane as mobile phase); 1/2 of extract- aliphatic/aromatic fractionation on silica SPE - aromatic fraction analyzed for PAH; other 1/2 of extract - PCB/pesticides fractionated on silica SPE	yes	IS
20	silica/alumina column chromatography, HPLC (phenogel 100 A column), reduce to 0.5 mL in water bath	no	IS

Lab #	PAHs				Calibration Curve		
	Instrument	Phase	Dimensions	# points	range		
1	GC/MS	DB-XLB	60m x 0.25 mm, 0.25um filn	6	100 - 5000 ng/g		
1b	GC/MS	DB-17MS	60m x 0.25 mm, 0.25um filn	5	0.4 - 8 µg extracted		
1c	GC/MS	DB-17	60m x 0.25 mm, 0.25um filn	5	4 ng/µL to 0.015 ng/µL		
2	GC/MS	5% phenyl	30m x 0.25 mm, 0.25um filn	9	10 - 10000 ng/mL		
4							
7	GC/MS	DB-5	30m x 0.25 mm, 0.25um filn	6	5 - 500 ppb		
8	GC/MS	HP-5MS	30m x 0.25 mm, 0.25um filn	5	10 - 500 ng/mL		
9	GC/MS	Rtx-5MS	30m x 0.25 mm, 0.25um filn	6	10 - 200 ng/mL		
11	GC/MS	DB-5MS	30m x 0.25 mm, 0.25um filn	5	20 - 1000 ng/µL		
12	GC/MS	5% phenyl	30m x 0.25 mm, 0.50um filn	7	10 - 250 ppb		
14	GC/MS	DB-5	25m x 0.2 mm, 0.33um filn	5	50 - 11408 ng/mL		
15	GC/MS	DB-5	60m x 0.25 mm, 0.25um filn	7	0.001 - 1 ng/µL		
16							
17	GC/MS	DB-5	60m x 0.25 mm, 0.25um filn	7	0.005 - 10		
18	GC/MS	Rtx-5	30m x 0.25 mm, 0.25um filn	6	10 - 10000 ng/mL		
19	GC-ITMS	Rtx-5MS	30m x 0.25 mm, 0.25um filn	7	30 - 13000 ng/mL		
20	GC/MS	HP-5MS	60m x 0.25 mm, 0.25um filn	5	20-1000 ng/mL		

Lab #	PCBs			Calibration Curve		PESTICIDES			Calibration Curve	
	Instrument	Phase	Dimensions	# points	range	Instrument	Phase	Dimensions	# points	range
1	GC/MS	DB-XLB	60m x 0.25 mm, 0.25um	5	2 - 150 ng/g	GC/MS	DB-XLB	60m x 0.25 mm, 0.25um	5	2 - 150 ng/g
1b	GC/MS	DB-XLB	60m x 0.25 mm, 0.25um	5	12-260 ng extracted	GC/MS	DB-XLB	60m x 0.25 mm, 0.25um	5	13 - 235 ng extracted
1c	GC-ECD	DB-5/DB-XLB	60m x 0.25 mm, 0.25um	5	0.003 - 0.25 ng/uL	GC-ECD	DB-5/DB-XLB	60m x 0.25 mm, 0.25um	5	0.003 - 0.25 ng/uL
2	GC-ECD	DB-35MS/DB-XLB	30m x 0.32 mm, 0.25um	6	2.5 - 200 ng/mL					
4						GC-ECD	Rtx-5/Rtx-1701	30m x 0.25 mm, 0.25um	3 to 8	1 - 200 pg/uL
7	GC-ECD	DB-5/DB-17	60m x 0.25 mm, 0.25um	7	0.5 - 100 ppb	GC-ECD	DB-5/DB-17	60m x 0.25 mm, 0.25um	7	0.5 - 100 ppb
8	GC-ECD	HP-5MS/DB-17	30m x 0.25 mm, 0.25um	5	5 - 100 ng/mL	GC-ECD	HP-5MS/DB-17	30m x 0.25 mm, 0.25um	5	5 - 100 ng/mL
9	GC-ECD	Rtx-5/Rtx-35	60m x 0.25 mm, 0.25um	5	0.5 - 10 ng/mL	GC-ECD	Rtx-5/Rtx-35	60m x 0.25 mm, 0.25um	5	0.5 - 10 ng/mL
11	GC-ECD	DB-5	30m x 0.25 mm, 0.25um	4	5 - 200 ng/uL	GC-ECD	DB-5	30m x 0.25 mm, 0.25um	4	5 - 200 ng/uL
12	GC/MS	5% phenyl	30m x 0.25 mm, 0.25um	8	5 - 85 ppb	GC/MS	5% phenyl	30m x 0.25 mm, 0.25um	6	5 - 80 ppb
14	GC-ECD	DB-5	60m x 0.25 mm, 0.25um	5	0.019 - 86 ng/mL	GC-ECD	DB-5	60m x 0.25 mm, 0.25um	5	2 - 20 ng/mL
15	GC/MS	DB-5	60m x 0.25 mm, 0.25um	6	0.001 - 0.32 ng/uL	GC/MS	DB-5	60m x 0.25 mm, 0.25um	6	0.001 - 0.32 ng/uL
16	GC/HRMS	SPB-Octyl	30m x 0.25 mm, 0.25um	6	0.2 - 2000 ng/mL	GC/HRMS	DB-5	60m x 0.32 mm, 0.25um	6	2.5 - 2500 ng/mL
17	GC-ECD	DB-5	60m x 0.25 mm, 0.25um	7	0.001 - 0.126	GC-ECD	DB-5	60m x 0.25 mm, 0.25um	7	0.001 - 0.125
18	GC/MS	Rtx-5	30m x 0.25 mm, 0.25um	6	0.25 - 500 ng/mL	GC/MS	Rtx-5	30m x 0.25 mm, 0.25um	6	1 - 500 ng/mL
19	GC-ECD	Rtx-5/Rtx-50	30m x 0.25 mm, 0.25um	6	0.40 - 100 ng/mL	GC-ECD	Rtx-5/DB-1701p	30m x 0.25 mm, 0.25um	6	0.4 - 100 ng/mL
20	GC-ECD	DB-5/DB-17	30m x 0.25 mm, 0.25um	5	5 - 200 ng/mL	GC-ECD	DB-5/DB-17	30m x 0.25 mm, 0.25um	5	5 - 200 ng/mL

Lab #	IS/surrogate added prior to extraction	PAHs			corrected for recovery?	others?
		Used?	added prior to analysis	Used?		
1a	deuterated naphthalene, biphenyl, acenaphthene, phenanthrene, fluoranthene, pyrene, B[a]A, B[a]P, perylene, B[ghi]P, DB[a,h]A	x				
1b	d-PAHs	x				
1c	deuterated naphthalene, biphenyl, acenaphthene, phenanthrene, fluoranthene, pyrene, B[a]A, B[a]P, perylene, B[ghi]P, DB[a,h]A	x				
2	surrogates - deuterated biphenyl, fluorene, fluoranthene, terphenyl		IS - deuterated naphthalene, acenaphthene, phenanthrene, chrysene, perylene	x	n	
4						
7		x				
8	deuterated naphthalene, acenaphthene, phenanthrene, fluoranthene, chrysene, B[a]P		deuterated fluorene, pyrene, perylene	x	n	
9			deuterated fluorene, and chrysene	x	n	
11	deuterated naphthalene, acenaphthene, phenanthrene, chrysene, and perylene	x	deuterated fluorene and B[a]P			
12	deuterated anthracene, B[a]P, DB[a,h]A, B[a]A	x	deuterated acenaphthene, perylene, phenanthrene, and chrysene	x	y	
14	deuterated naphthalene, fluorene, fluoranthene, and perylene		deuterated phenanthrene	x		
15	deuterated naphthalene, acenaphthene, B[a]P	x	hexamethylbenzene			
16						
17	deuterated naphthalene, phenanthrene, chrysene		deuterated acenaphthene, fluorene, B[a]P	x	y	
18	deuterated 2-methyl naphthalene, pyrene, B[ghi]P	x	deuterated naphthalene, acenaphthene, phenanthrene, chrysene, perylene	x		
19	18 deuterated PAHs (see notes)	x	deuterated terphenyl			
20	surrogates - deuterated naphthalene, acenaphthene, phenanthrene, chrysene, perylene		IS - deuterated fluorene, pyrene, B[a]P	x	y	

Lab #	IS/surrogate added prior to extraction	PCBs		corrected for recovery?	others?	Pesticides		corrected for recovery?	others?
		Used?	added prior to analysis			Used?	added prior to analysis		
1a	PCB 103, PCB 198, and deuterated DDD and DDT	x				x			
1b	C-13 labeled compounds	x				x			
1c	PCB 103 and 198	x				x			
2									
4									
7									
8	g-chlordane, PCB 103, PCB 198	x	IS - 4,4'-dibromocyclohexyl			x	IS - 4,4'-dibromocyclohexyl		
9									
11	DBOPB, PCB 103, and PCB 198	x	TCMX			x	TCMX		
12	C-13 labeled PCB 194 and 153	x	C-13 labeled PCB 138			x	deuterated 4,4'-DDT		
14	PCB 14, 65, 166		PCB 30 and 204						
15	PCB 103	x	tetrachloro-o-xylene			x	tetrachloro-o-xylene		
16	Labeled PCB 1,3,4,19,15,54,104,37,155,81,77,123,118,188,114,105,126,2 02,156,157,169,208,189,205,206,209	x	labeled PCB 9,52,138, 194 PCB 166, 96, and 104			x	carbon-13 labeled delta-BHC and PCB 101		
17	PCB 104, 112, 14, and 35								
18	Carbon-13 labeled PCB 15 and PCB 202	x	carbon-13 labeled PCB 15 and 180			x	carbon-13 labeled PCB 15 and 180		
19	PCB 103 and 198	x	delta-HCH			x	delta-HCH		
20	surrogate - 4,4'-dibromocyclohexyl, 2,3',4,5',6'- pentachlorobiphenyl, 2,2',3',4,5,5',6'-octachlorobiphenyl		IS - tetrachloro-methyl-xylene				IS - tetrachloro-methyl-xylene		

Appendix F: Laboratory Methods Used, Marine Sediment XII

Lab #	Reported	g extracted QA03SED12	g extracted SRM 1941b	% water Determination	Extraction Method	Extraction Solvent	Extraction Time	Extraction other
1a	7/12/2003	6 wet	3 dry	freeze-dry	PFE	dichloromethane	3 cycles each 5 min	temp = 100 °C; pressure 2000 psi; 3 static cycles / sample
1b	10/6/2003	15 wet	10 dry	not analyzed	Soxhlet	dichloromethane	overnight	activated Cu added to extracts
1c	10/15/2003	6 wet	5 dry	freeze-dry	PFE	dichloromethane	3 cycles each 5 min	temp = 100 °C; pressure 2000 psi; 3 static cycles / sample
2	6/17/2003	10 wet (5 for PAHs)	10 dry (5 for PAHs)	overn drying - EPA 160.3	Soxhlet (EPA 3540) for PCB; automated Soxhlet (EPA 3541)	dichloromethane	16 h (PCBs); 2 h (PAHs)	
3	7/4/2003	3 wet	1 dry	oven dry 105 °C for 17h	automatic Soxhlet	dichloromethane	35 min	
4	7/10/2003	8 wet	10 dry	drying balance	Soxhlet	dichloromethane	12 h	
5	7/10/2003	7.5 wet	5 dry	oven dry 105 °C for 24h	PFE	dichloromethane	20 min	2 cycles
6	7/10/2003	15 wet	0.5 dry	oven dry 100 °C for 24h	PFE	dichloromethane	20 min	
7	7/2/2003	5 wet	5 dry	approx 2 g dried at 70 °C for 48 h	PFE	dichloromethane/acetone	40 min	
9	7/11/2003	5 wet	5 dry	EPA 160.3	SW-846 Method 3550B, Sonication	dichloromethane:acetone (1:1)	4 x 2 min	
10	7/11/2003	3 wet	3 dry	oven dry overnight at 105 °C	sonication	dichloromethane:acetone (1:1) - 100 mL	3 x 3 min	
11	7/11/2003	10.5 wet	1 dry	dry at 50 °C and weigh air dry in fume hood for 24h	PFE	dichloromethane	20 min	sonicated in 8 x the mass of sediment to volume of solvent
12	7/16/2003	4 wet			sonication with a probe	dichloromethane	3 x 3 min	
13	7/15/2003	6 wet	10 g dry chlorinated and 1g PAHs	EPA 160.3	PFE	dichloromethane	5 min	temp = 100 °C - 5 min equilibration; pressure 1500 - 2000 psi; 0.6 x tube volume for flush; purge 45 sec nitrogen at 150 psi
14	7/21/2003	2 wet		2 g dried at 100 °C for 24h	Soxhlet	dichloromethane	18 h	
15	8/13/2003	3 wet	1.5 dry	120 °C for 24h	PFE	dichloromethane	16 min	temp = 100 °C; pressure 2000 psi
16	8/8/2003	1.1 g wet	1.1 g wet	overnight at 100 °C	PFE	toluene	2 x 5 min static	
17	7/10/2003	12 wet	1.1 dry	105 °C for at least 24h	NOAA NS&T	dichloromethane	shaker table - 1st shake 12 h; second shake 4 h; third shake 30 min	
18	8/8/2003	5.22 wet	3.16 dry	105 °C oven	PFE	dichloromethane:acetone	15 min	
19	8/22/2003	5 wet	4 dry	120 °C oven	PFE	dichloromethane	3 x 5 min	sodium sulfate added prior to extraction
20	8/29/2003	4.1 wet	2 dry	105 °C until constant weight	PFE	dichloromethane	13 min	temp = 100 °C; pressure 2000 psi; 2 static cycles / sample; reduce to 2 to 3 mL using water bath

Lab #	Sample extract cleanup method	PCBs and Pesticides Separated?	Method of quantitation
1a	gel permeation chromatography (GPC); silica solid phase extraction (SPE) column; condition and elute with 10 % dichloromethane in hexane	no	IS
1b	SPE column; condition and elute with 10 % dichloromethane in hexane (2 x 20 mL)	no	IS
1c	1g florisil column - elute with 10.5 mL of dichloromethane:hexane (1:1); following analysis for PAHs fractionate on 1 g silica column - 1st fraction eluted with 5 mL hexane; 2nd fraction with 6 mL of dichloromethane:hexane (1:1); activated copper added prior to GC-ECD analysis	yes	IS
2	PCBs - GPC (EPA 3620), copper (EPA 3660), sulfuric acid (EPA 3665); PAHs - silica gel (EPA 3630)	no	PAH - IS; PCBs- ES
3	silica/alumina column	yes	IS
4	GPC only for PAH; GPC plus alumina silica for pesticides		PAH - IS; pesticides- ES
5	50% sample used for PAH - silica gel column; 50% of sample used for Pest/PCB - florisil column - 0% and 50% fractions collected ; aft florisil 0% fraction - tetrabutylammonium hydrogen sulfate extraction followed by conc H2SO4	partly	PAH - IS; pest & PCBs- ES
6	silica gel and alumina column used to separate into aliphatic and aromatic components - aromatic fraction further cleaned up by GPC/HPLC fractionation		IS
7	GPC and florisil	no	ES
9	PAH- EPA SW846 3640A (GPC); Pesticides - EPA SW846 3620B (florisil); PCBs - EPA SW846 3620B (florisil) and 3665 (sulfuric acid)	no	PAH - IS; pest & PCBs- ES
10	GPC SX-3 biobeads using 100% methylene chloride		IS
11	silica gel/ alumina	no	IS
12	GPC (OI analytical Envirobeads S-X3 temperature 19 °C) - elute with 1:1 DCM:cyclohexane; treated for sulphur by adding 20-30 mesh copper pellets activated with HCl and solvent rinsed.		IS for PAH and PCBs; ES for pesticides
13	PAH - alumina/activated copper; PCBs & pesticides - alumina/ activated copper; to hexane	no	IS
14	gravitational alumina column; gravitational florisil chromatography	yes	IS
15	gravity flow column with silica and neutral alumina, followed by HPLC-SEC to elute AH/CH fraction	no	IS
16	pesticides - GPC and multiple silica gel cleanup columns; PCBs - GPC followed by acid/base silica, alumina, and light acid/base silica columns		IS
17	extracts concentrated; poured through 40g - 6% deactivated super B alumina column- eluted with dichloromethane and concentrated for HPLC/GPC fractionation	no	IS
18	silica gel/ additional sulfuric acid for PCB congeners	yes	IS
19	GPC (SDVB column w/ dichloromethane as mobile phase); 1/2 of extract- aliphatic/aromatic fractionation on silica SPE - aromatic fraction analyzed for PAH; other 1/2 of extract - PCB/pesticides fractionated on silica SPE	yes	IS
20	silica/alumina column chromatography, addition of copper granules for sulfur removal, reduce to 1.0 mL	no	IS

Lab #	PAHs		Calibration Curve		
	Instrument	Phase	Dimensions	# points	range
1a	GC/MS	DB-XLB	60m x 0.25 mm, 0.25um filn	6	20 - 1500 ng/g
1b	GC/MS	DB-17MS	60m x 0.25 mm, 0.25um filn	5	0.4 - 8 µg extracted
1c	GC/MS	DB-17	60m x 0.25 mm, 0.25um filn	5	4 ng/µL to 0.015 ng/µL
2	GC/MS	5% phenyl	30m x 0.25 mm, 0.25um filn	9	10 - 10000 ng/mL
3	GC/MS	DB-5MS	30m x 0.25 mm, 0.25um filn	5	20 - 800 ng/mL
4	GC/MS	5% phenyl	30m x 0.25 mm, 0.25um filn	7	50 - 1000 ng/g
5	GC/MS	DB-5	30m x 0.25 mm, 0.25um filn	8	0.01 - 1.6 µg/mL
6	GC/MS	5% phenyl	25m x 0.2 mm, 0.33um filn	5	6 - 1800 ng/g
7	GC/MS	DB-5	30m x 0.25 mm, 0.25um filn	6	5 - 500 ppb
9	GC/MS	Rtx-5MS	30m x 0.25 mm, 0.25um filn	6	10 - 200 ng/mL
10	GC/MS	5% phenyl	30m x 0.25 mm, 0.25um filn	13	0.005 - 40 ng
11	GC/MS	DB-5MS	30m x 0.25 mm, 0.25um filn	5	20 - 1000 ng/µL
12	GC/MS	5% phenyl	30m x 0.25 mm, 0.25um filn	7	10 - 250 ppb
13	Gc/MS	DB-5MS	30m x 0.25 mm, 0.25um filn	9	50 - 8000 ng/mL
14	GC/MS	DB-5	25m x 0.2 mm, 0.33um filn	5	50 - 11408 ng/mL
15	GC/MS	DB-5	60m x 0.25 mm, 0.25um filn	7	0.015 - 10 ng/µL
16					
				6 for # 1 & 7 for #	0.025 - 7.6 for sample 1 & 0.005 - 10 for samples 2&3
17	GC/MS	DB-5	60m x 0.25 mm, 0.25um filn	2&3	
18	GC/MS	Rtx-5	30m x 0.25 mm, 0.25um filn	6	10 - 10000 ng/mL
19	GC-ITMS	Rtx-5MS	30m x 0.25 mm, 0.25um filn	7	30 - 10000 ng/mL
20	GC/MS	HP-5MS	60m x 0.25 mm, 0.25um filn	5	20-1000 ng/mL

Lab #	PCBs			Calibration Curve			PESTICIDES			Calibration Curve		
	Instrument	Phase	Dimensions	# points	range		Instrument	Phase	Dimensions	# points	range	
1a	GC/MS	DB-XLB	60m x 0.25 mm, 0.25um	5	2 - 150 ng/g		GC/MS	DB-XLB	60m x 0.25 mm, 0.25um	5	2 - 150 ng/g	
1b	GC/MS	DB-XLB	60m x 0.25 mm, 0.25um	5	12-260 ng extracted		GC/MS	DB-XLB	60m x 0.25 mm, 0.25um	5	13 - 235 ng extracted	
1c	GC-ECD	DB-5/DB-XLB	60m x 0.25 mm, 0.25um	5	0.003 - 0.25 ng/uL		GC-ECD	DB-5/DB-XLB	60m x 0.25 mm, 0.25um	5	0.003 - 0.25 ng/uL	
2	GC-ECD	DB-35MS/ DB-XLB	30m x 0.32 mm, 0.25um	6	2.5 - 200 ng/mL							
3												
4							GC-ECD	Rtx-5/Rtx-1701	30m x 0.25 mm, 0.25um	6	5 - 200 pg/uL	
5	GC-ECD	Rtx-CLPesticides/ Rt x-CLPesticides II	30m x 0.32 mm, 0.25um	7	1 - 100 ng/mL		GC-ECD	Rtx-CLPesticides/ Rt x-CLPesticides II	30m x 0.32 mm, 0.5um	8	1 - 250 ng/mL	
6												
7	GC-ECD	DB-5/DB-17	60m x 0.25 mm, 0.25um	7	0.5 - 100 ppb		GC-ECD	DB-5/DB-17	60m x 0.25 mm, 0.25um	7	0.5 - 100 ppb	
9	GC-ECD	Rtx-5/Rtx-35	60m x 0.25 mm, 0.25um	5	0.5 - 10 ng/mL		GC-ECD	Rtx-5/Rtx-35	60m x 0.25 mm, 0.25um	5	0.5 - 10 ng/mL	
10												
11	GC-ECD	DB-5	30m x 0.25 mm, 0.25um	4	5 - 200 ng/uL		GC-ECD	DB-5	30m x 0.25 mm, 0.25um	4	5 - 200 ng/uL	
12	GC/MS	5% phenyl	30m x 0.25 mm, 0.25um	8	5 - 85 ppb		GC/MS	5% phenyl	30m x 0.25 mm, 0.25um	6	5 - 80 ppb	
13	GC-ECD	DB-5MS/DB-17MS	60m x 0.25 mm, 0.25um	6	5 - 400 ng/mL		GC-ECD	DB-5MS/DB-17MS	60m x 0.25 mm, 0.25um	6	5 - 400 ng/mL	
14	GC-ECD	DB-5	60m x 0.25 mm, 0.25um	5	0.019 - 86 ng/mL		GC-ECD	DB-5	60m x 0.25 mm, 0.25um	5	1 - 10 ng/mL	
15	GC/MS	DB-5	60m x 0.25 mm, 0.25um	6	0.001 - 0.32 ng/uL		GC/MS	DB-5	60m x 0.25 mm, 0.25um	6	0.001 - 0.32 ng/uL	
16	GC/HRMS	SPB-Octyl	30m x 0.25 mm, 0.25um	6	0.2 - 2000 ng/mL		GC/HRMS	DB-5	60m x 0.32 mm, 0.25um	6	2.5 - 2500 ng/mL	
17	GC-ECD	DB-5	60m x 0.25 mm, 0.25um	7	0.001-.0126		GC-ECD	DB-5	60m x 0.25 mm, 0.25um	7	0.001-.0125	
18	GC/MS	Rtx-5	30m x 0.25 mm, 0.25um	6	0.25 - 500 ng/mL		GC/MS	Rtx-5	30m x 0.25 mm, 0.25um	6	1 - 500 ng/mL	
19	GC-ECD	Rtx-5/Rtx-50	30m x 0.25 mm, 0.25um	6	0.4 - 100 ng/mL		GC-ECD	Rtx-5/DB-1701p	30m x 0.25 mm, 0.25um	6	0.4 - 100 ng/mL	
20	GC-ECD	DB-5/DB-17	30m x 0.25 mm, 0.25um	5	5 - 200 ng/mL		GC-ECD	DB-5/DB-17	30m x 0.25 mm, 0.25um	5	5 - 200 ng/mL	

Lab #	IS/surrogate added prior to extraction	PAHs added prior to analysis		corrected for recovery?		others?
		Used?		Used?		
	deuterated naphthalene, biphenyl, acenaphthene, phenanthrene, fluoranthene, pyrene, B[a]A, B[a]P, perylene, B[ghi]P, DB[a,h]A	x				
1a	d-PAHs	x				
1b	deuterated naphthalene, biphenyl, acenaphthene, phenanthrene, pyrene, B[a]A, B[a]P, perylene, B[ghi]P, DB[a,h]A	x				
1c	surrogates: deuterated biphenyl, fluorene, fluoranthene, terphenyl		IS- deuterated naphthalene, acenaphthene, phenanthrene, chrysene, perylene	x	n	deuterated anthracene and terphenyl added prior to extraction
2	deuterated naphthalene, acenaphthylene, phenanthrene, pyrene, B[a]P, B[ghi]P	x	deuterated 1,4-dichlorobenzene, naphthalene, acenaphthene, phenanthrene, chrysene, and perylene	x	n	deuterated B[ghi]P added prior to GPC cleanup
3	deuterated naphthalene, 2-methylanthracene, 1-methylnaphthalene, biphenyl, 2,6-dimethylnaphthalene, acenaphthylene, fluorene, dibenzothiophene, phenanthrene, anthracene, fluoranthene, perylene, B[a]A, chrysene, B[b]F, B[k]F, B[a]P, B[a]P, perylene, II,1,2,3-cd[P, DB[a,h]A, B[ghi]P	x	hexamethylbenzene			
4	deuterated naphthalene, acenaphthylene, phenanthrene, chrysene, B[a]P, perylene	x	deuterated fluorene and chrysene	x	n	
5	deuterated naphthalene, 2-methylanthracene, 1-methylnaphthalene, biphenyl, 2,6-dimethylnaphthalene, acenaphthylene, fluorene, dibenzothiophene, phenanthrene, anthracene, fluoranthene, perylene, B[a]A, chrysene, B[b]F, B[k]F, B[a]P, B[a]P, perylene, II,1,2,3-cd[P, DB[a,h]A, B[ghi]P	x				
6	deuterated naphthalene, acenaphthylene, phenanthrene, chrysene, B[a]P, perylene	x				
7		x				
9			deuterated fluorene and chrysene	x	n	deuterated 1,4-dichlorobenzene, naphthalene, acenaphthene, phenanthrene, chrysene, perylene
10	deuterated nitrobenzene, 1,2-dichlorobenzene, 2-fluorobiphenyl, terphenyl		deuterated nitrobenzene, 1,2-dichlorobenzene, 2-fluorobiphenyl, terphenyl	x		
11	deuterated naphthalene, acenaphthene, phenanthrene, chrysene, and perylene	x	deuterated fluorene and B[a]P			
12	deuterated anthracene, B[a]P, DB[a,h]A, B[a]A	x	deuterated acenaphthene, perylene, phenanthrene, and chrysene	x	y	
13	deuterated naphthalene, acenaphthylene, phenanthrene, chrysene, perylene	x	deuterated fluorene and B[a]P	x	y	
14	deuterated naphthalene, fluorene, fluoranthene, and perylene		deuterated phenanthrene	x	y	
15	deuterated naphthalene, acenaphthene, B[a]P	x	hexamethylbenzene			deuterated phenanthrene added prior to HPLC-SEC
16						
17	deuterated naphthalene, phenanthrene, chrysene		deuterated acenaphthene, fluorene, B[a]P	x		
18	deuterated 2-methyl naphthalene, pyrene, B[b]F	x	deuterated naphthalene, acenaphthene, phenanthrene, chrysene, perylene	x		
19	18 deuterated PAHs (see notes)	x	deuterated terphenyl			
20	surrogates: deuterated naphthalene, acenaphthene, phenanthrene, chrysene, perylene		IS- deuterated fluorene, pyrene, B[a]P	x	y	

Lab #	IS/surrogate added prior to extraction	Used?	PCBs added prior to analysis	corrected for recovery?	others?	IS/surrogate added prior to extraction	Used?	Pesticides added prior to analysis	Used?	corrected for recovery?	others?
1a	PCB 101, PCB 198, and deuterated DDD and DDT	x				PCB 101, PCB 198, and deuterated DDD and DDT	x				
1b	C-13 labeled compounds	x				C-13 labeled compounds	x				
1c	PCB 101 and 198	x				deuterated 4,4'-DDE, 4,4'-DDT, 4,4'-DDD, and endosulfan	x				
2											
3											
4											
5											
6											
7											
9											
10											
11	DROFB, PCB 101, and PCB 198	x	TCMX			DROFB, PCB 101, and PCB 198	x	TCMX			
12	C-13 labeled PCB 194 and 153	x	C-13 labeled PCB 138	y		C-13 labeled 4,4'-DDE	x	deuterated 4,4'-DDT	x	y	
13	PCB 101 and 198	x	TCMX	y				TCMX	x	y	
14	PCB 14, 65, 166										
15	PCB 101	x	PCB 30 and 204			PCB 101	x	tetrachloro-o-xylene			TCMX prior to HPLC-SEC
16	Labeled PCB 1,3,4,19,15,54,104,37,155,81,77,123,118,188,114,105,126,2 02,156,157,169,208,189,205,206,209					carbon-13 labeled alpha-BHC, beta-BHC, HCB, 4,4'-DDE, 2,4'-DDT, 4,4'-DDT, and methoxychlor; deuterated endosulfan-I, endosulfan-II, and 4,4'-DDD		carbon-13 labeled delta-BHC and PCB 101			
17	PCB 104, 112, 14, and 35	x	labeled PCB 9,52,138,194			PCB 104, 112, 14, 34	x	PCB 166, 96, 103	x		
18	Carbon-13 labeled PCB 19 and PCB 202	x	carbon-13 labeled PCB 15 and 180			Carbon-13 labeled PCB 19 and PCB 202	x	carbon-13 labeled PCB 15 and 180	x		
19	PCB 101 and 198	x	delta-HCH			deuterated 4,4'-DDT and endosulfan-II	x	delta-HCH			
20	surrogate-4,4'-dibromooctachlorobiphenyl, 2,3,4,5,6- pentachlorobiphenyl, 2,2,3,3,4,5,5,6-octachlorobiphenyl		IS-TCMX	x	y	surrogate-4,4'-dibromooctachlorobiphenyl, 2,3,4,5,6- pentachlorobiphenyl, 2,2,3,3,4,5,5,6-octachlorobiphenyl		IS-TCMX	x	y	

Appendix G: Charts of Mussel Tissue XI and SRM 1974b Results by Analyte

See Tables 2 through 7 for results reported as *<number*, detection limit, etc. Also, note that lab 9's data plotted here are as per their original submission (in terms of dry mass). Lab 9 later submitted data in terms of wet mass as summarized in Tables 2 through 7.

Charts for analytes with few reported numerical results are not included in this appendix.

For Mussel Tissue XI plots:

Solid line: exercise assigned value

Dotted line: $z = \pm 1$, i. e., 25 % from assigned value

Dotted/dashed line: $z = \pm 2$, i. e., 50 % from assigned value

Dashed line: $z = \pm 3$, i. e., 75 % from assigned value

For SRM 1974b plots:

Solid line: material certified concentration or target value (see caption of each plot)

Dotted line: 95 % confidence interval (CI)

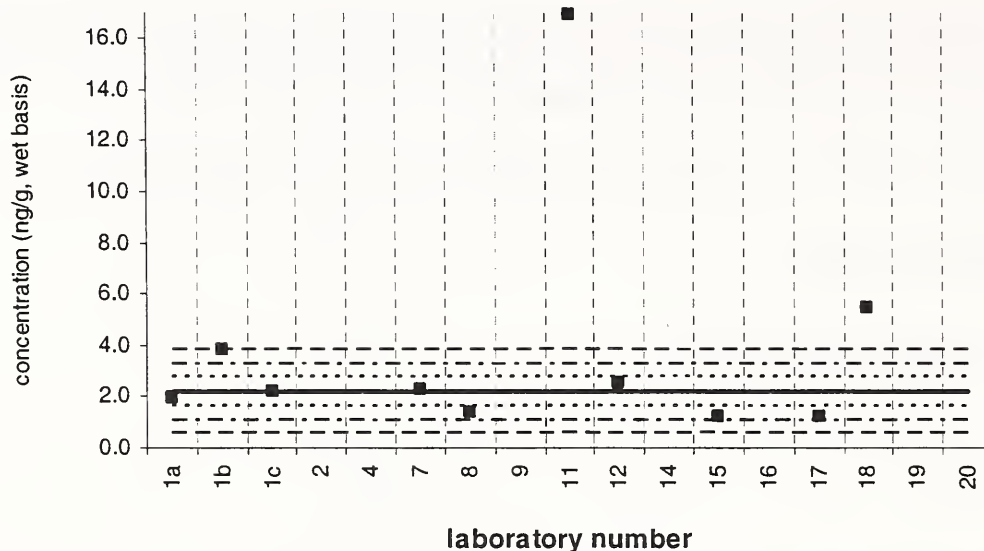
Dashed line: 30 % from 95 % confidence interval (CI)

naphthalene

Tissue XI (QA03TIS11)

Assigned value = 2.19 ng/g $s = 0.85$ ng/g 95% CL = 0.79 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 11



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

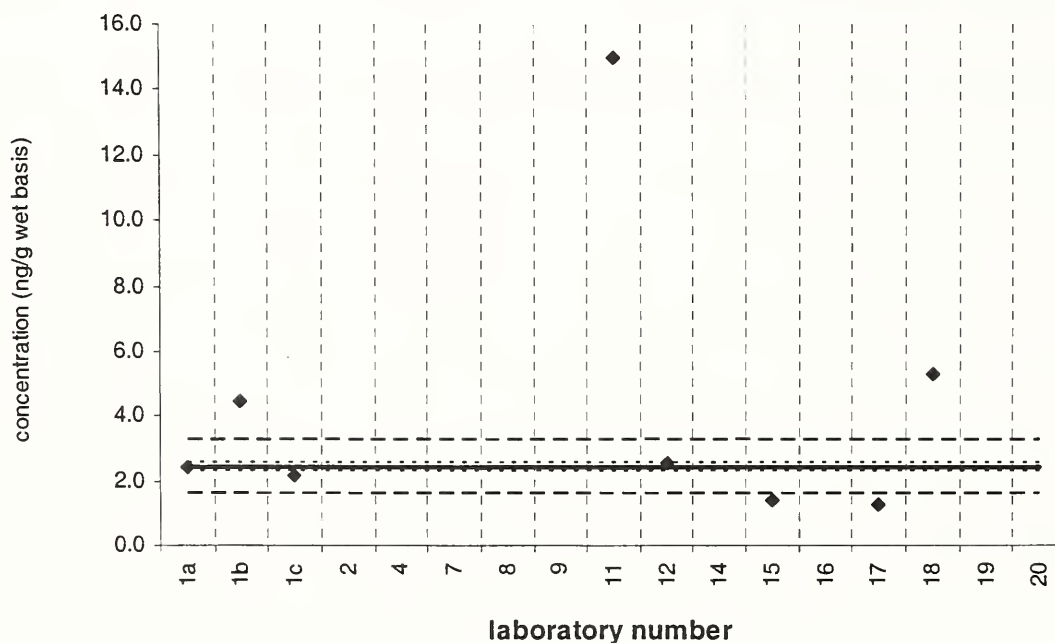
Lab 9 –
78.5

naphthalene

SRM 1974b

Certified Value = 2.43 ± 0.12 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 9



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
70.7

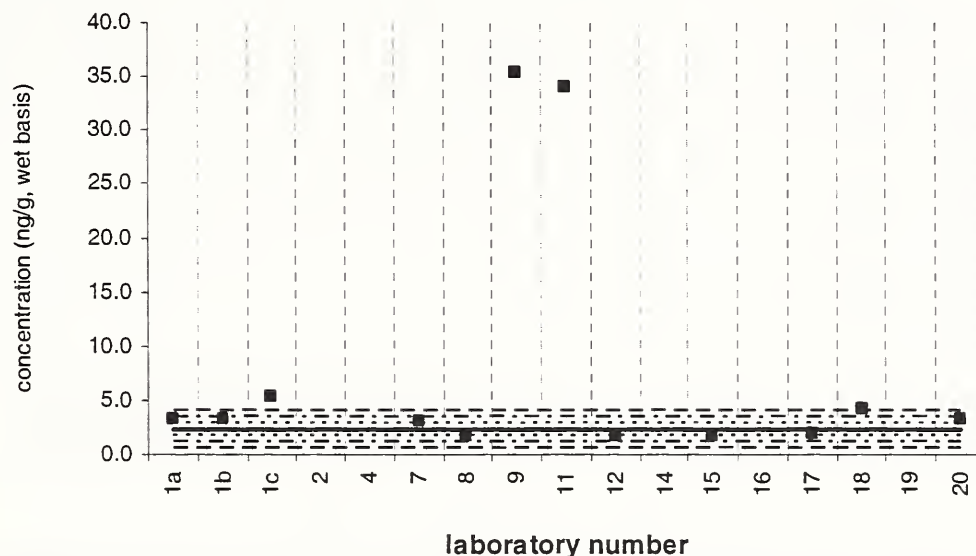
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

2-methylnaphthalene

Tissue XI (QA03TIS11)

Assigned value = 2.27 ng/g $s = 0.78$ ng/g 95% CL = 0.82 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 12



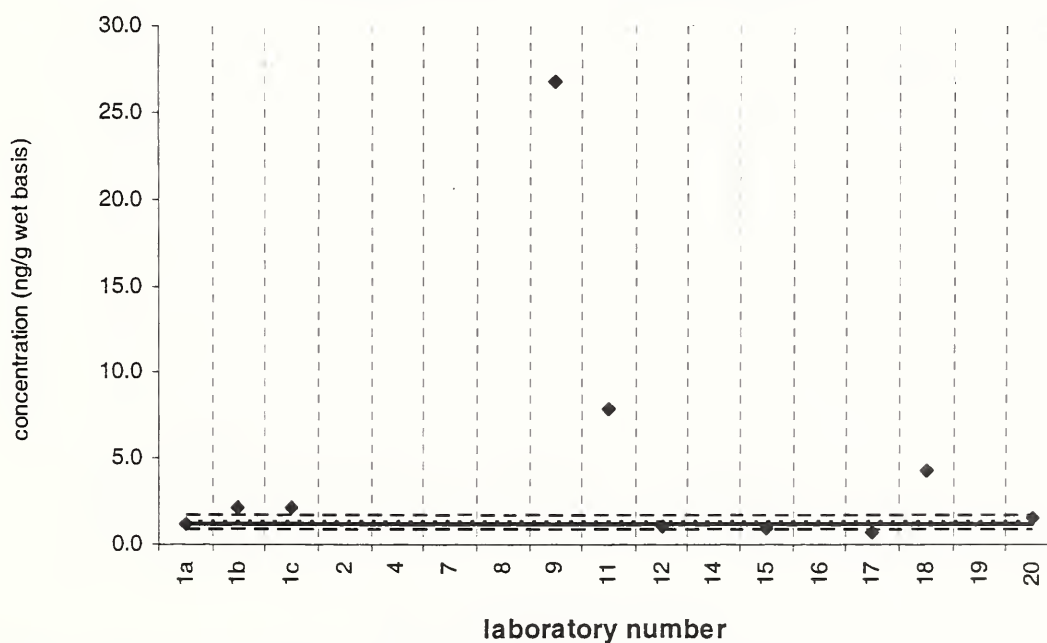
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

2-methylnaphthalene

SRM 1974b

Reference Value = 1.25 ± 0.09 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 10



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

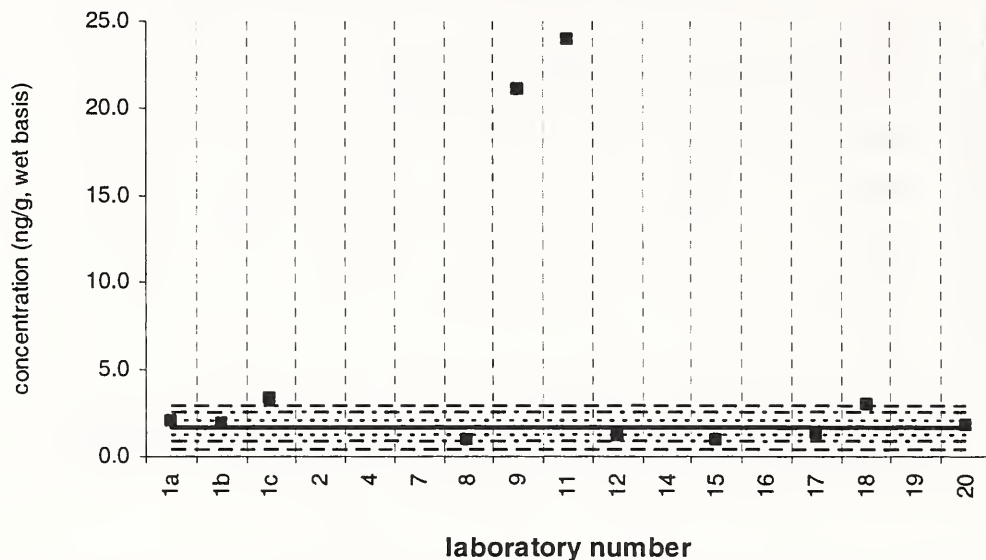
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

1-methylnaphthalene

Tissue XI (QA03TIS11)

Assigned value = 1.65 ng/g $s = 0.86$ ng/g 95% CL = 0.90 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 12



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

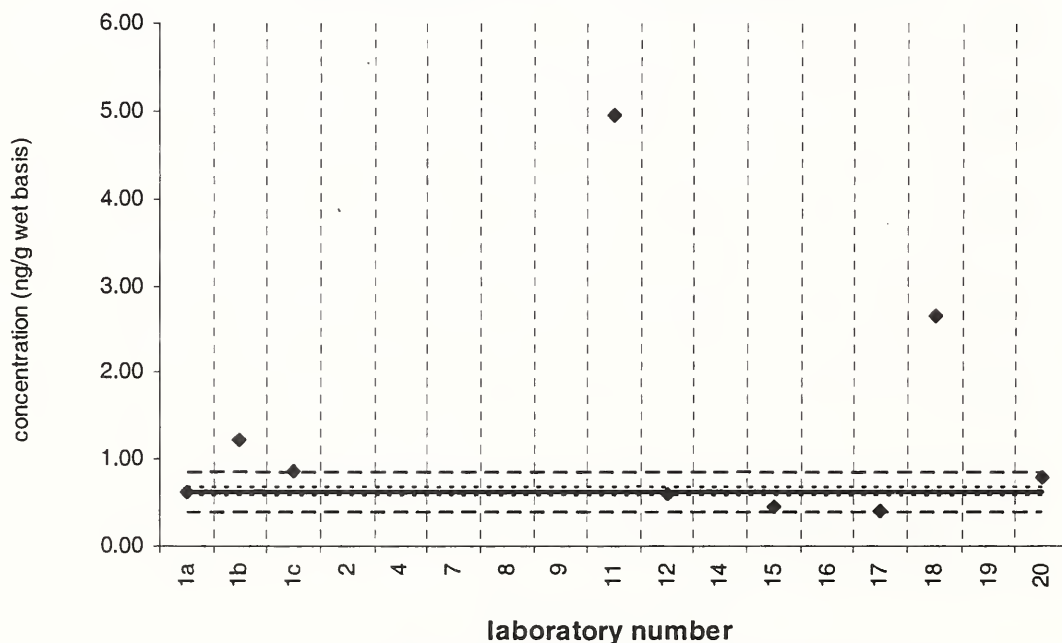
Lab 14 –
34.2

1-methylnaphthalene

SRM 1974b

Reference Value = 0.614 ± 0.050 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 10



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 14 –
36.5

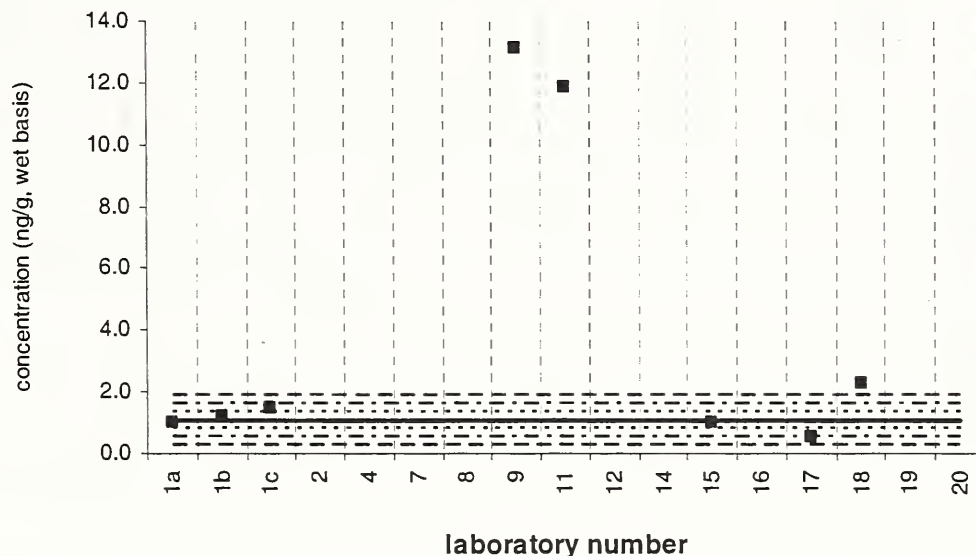
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

biphenyl

Tissue XI (QA03TIS11)

Assigned value = 1.06 ng/g $s = 0.34$ ng/g 95% CL = 0.43 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 8



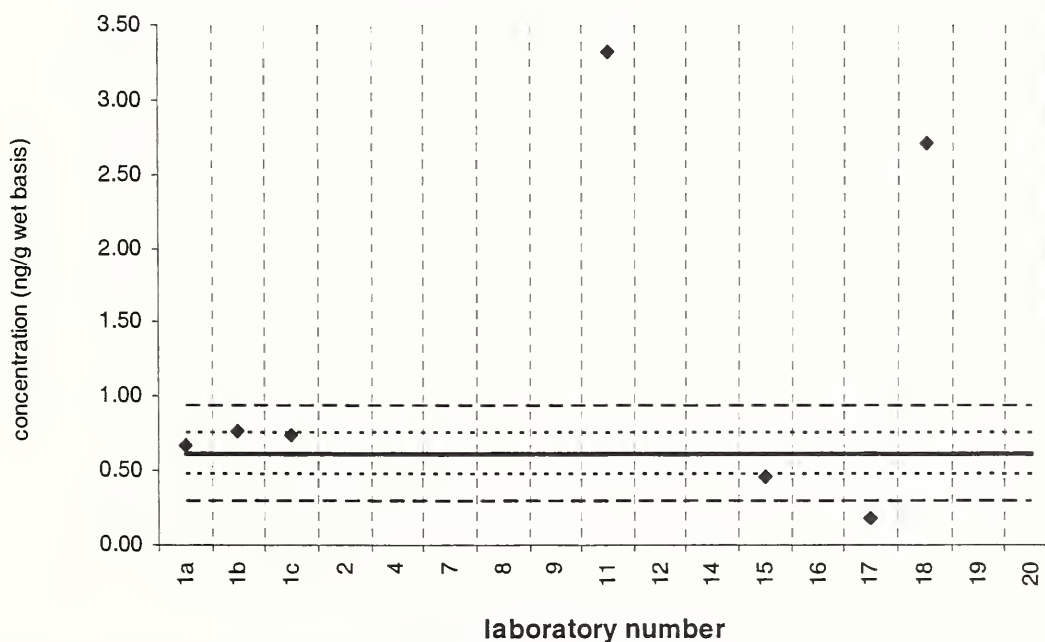
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

biphenyl

SRM 1974b

Reference Value = 0.610 ± 0.140 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 7



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

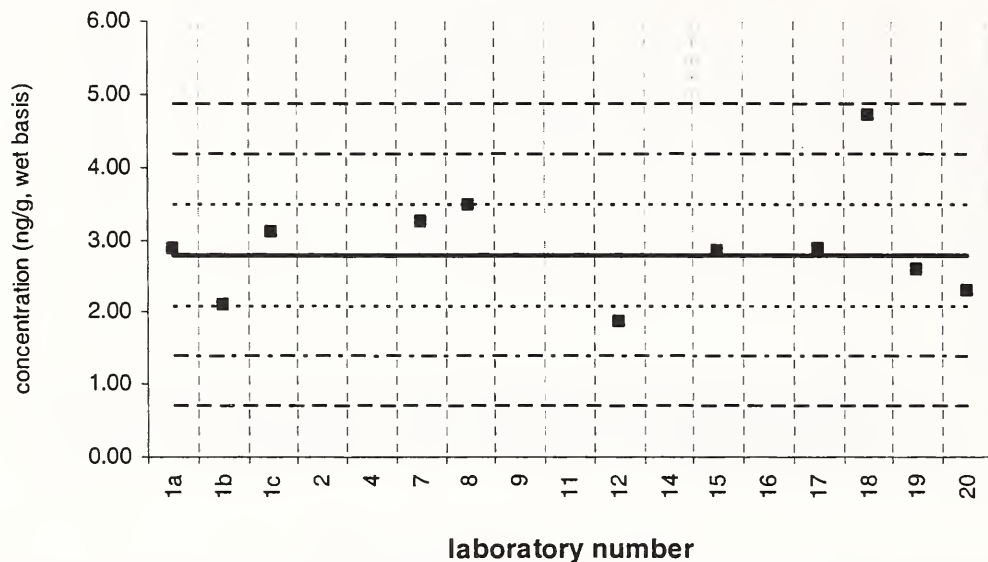
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

2,6-dimethylnaphthalene

Tissue XI (QA03TIS11)

Assigned value = 2.77 ng/g $s = 0.52$ ng/g 95% CL = 0.40 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 13



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

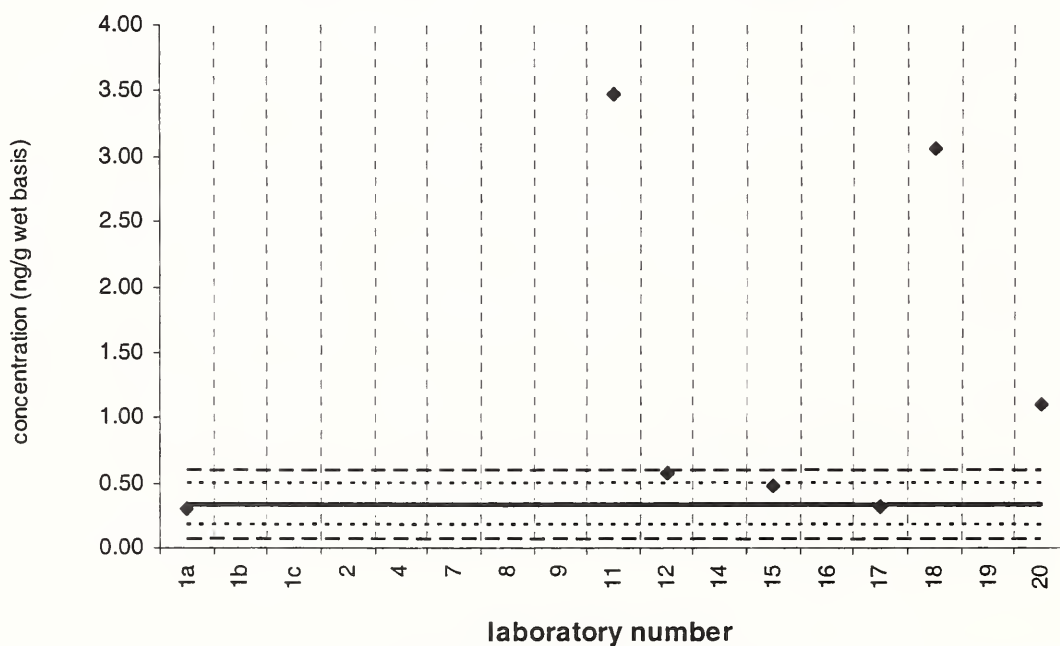
Lab 9-
35.6; Lab
11- 47.77

2,6-dimethylnaphthalene

SRM 1974b

Reference Value = 0.330 ± 0.160 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 7



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

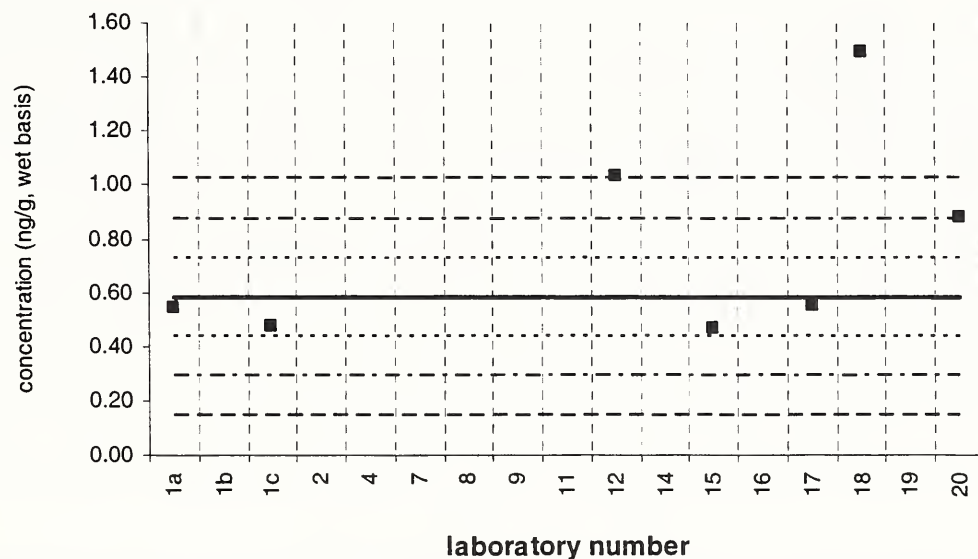
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

acenaphthylene

Tissue XI (QA03TIS11)

Assigned value = 0.584 ng/g $s = 0.169$ ng/g 95% CL = 0.210 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 9



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

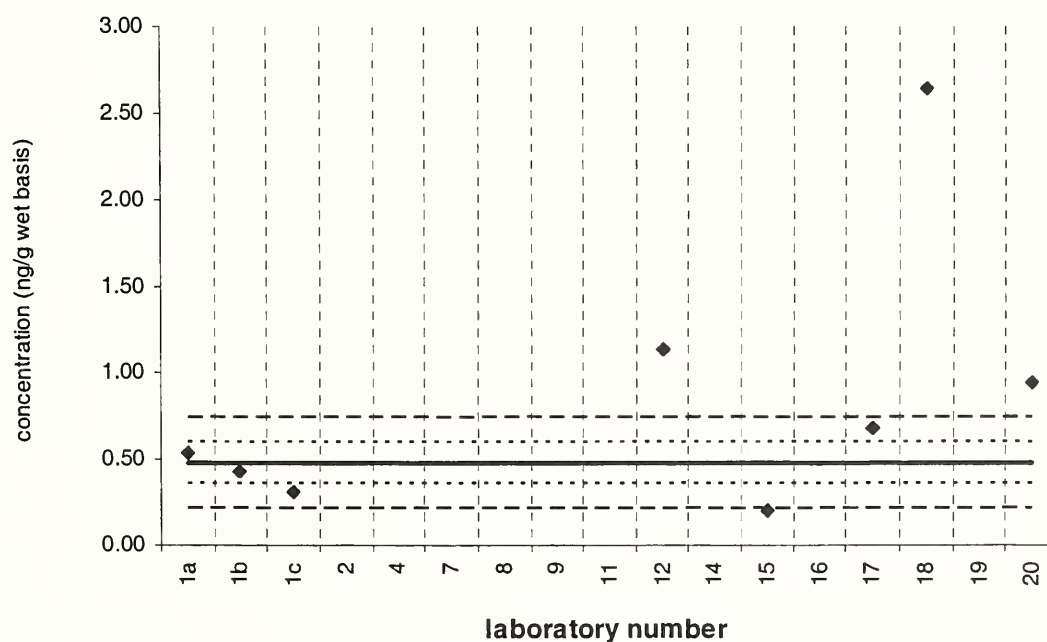
Lab 9-
8.10; Lab
11- 21.4

acenaphthylene

SRM 1974b

Reference Value = 0.480 ± 0.120 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 9



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 11-
6.60

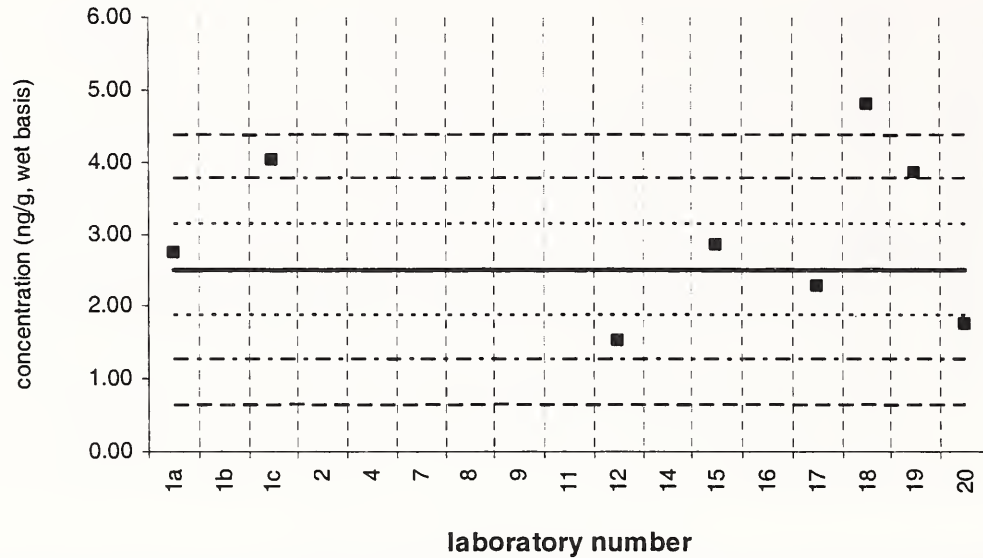
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

1,6,7-trimethylnaphthalene

Tissue XI (QA03TIS11)

Assigned value = 2.50 ng/g $s = 0.84$ ng/g 95% CL = 0.88 ng/g (wet basis)

Reported Results: 11 Quantitative Results: 9



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

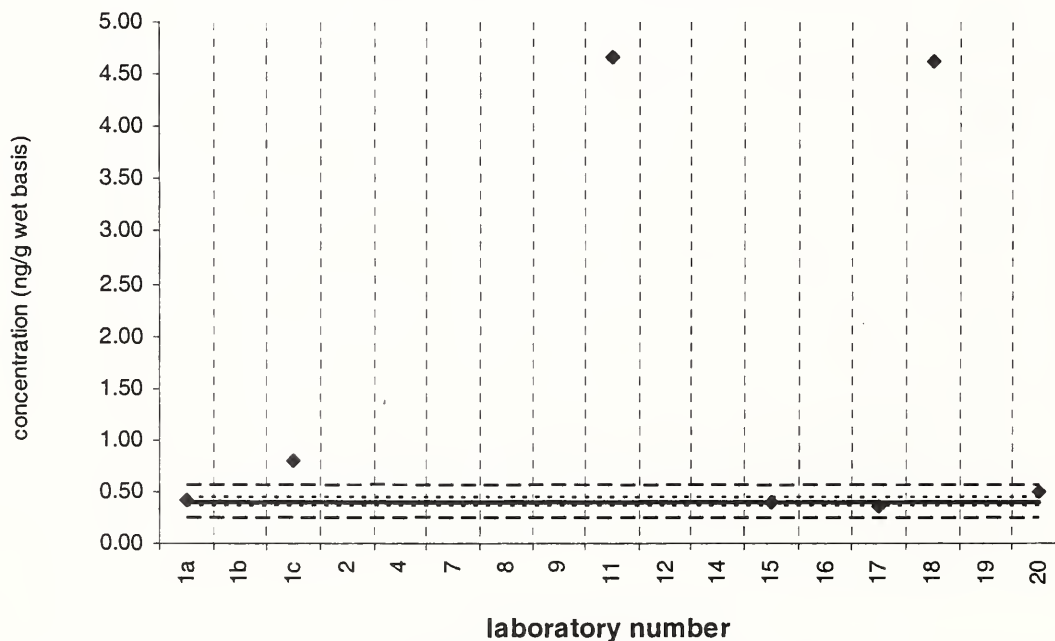
Lab 11-
48.8

1,6,7-trimethylnaphthalene

SRM 1974b

Reference Value = 0.400 ± 0.032 ng/g (wet basis)

Reported Results: 12 Quantitative Results: 8



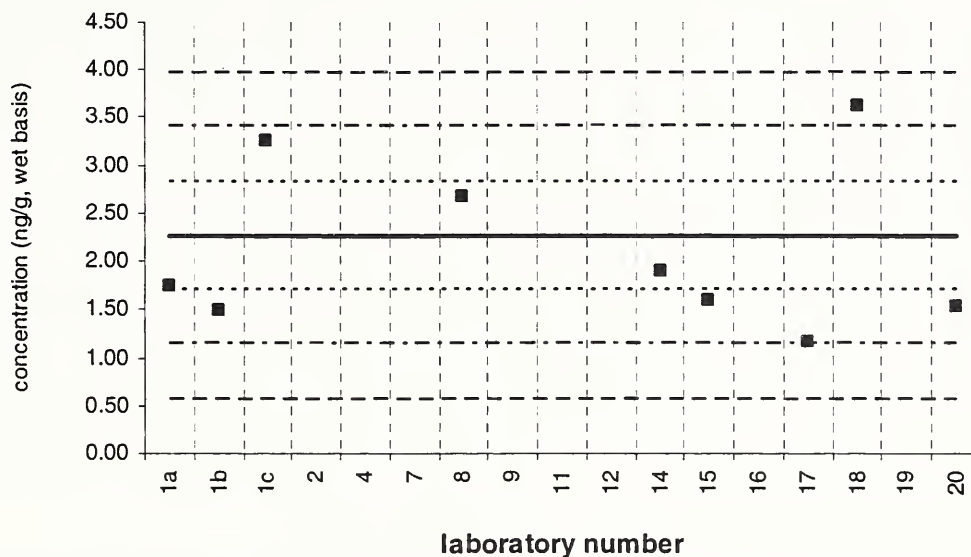
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

fluorene

Tissue XI (QA03TIS11)

Assigned value = 2.26 ng/g $s = 0.93$ ng/g 95% CL = 0.98 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 10



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

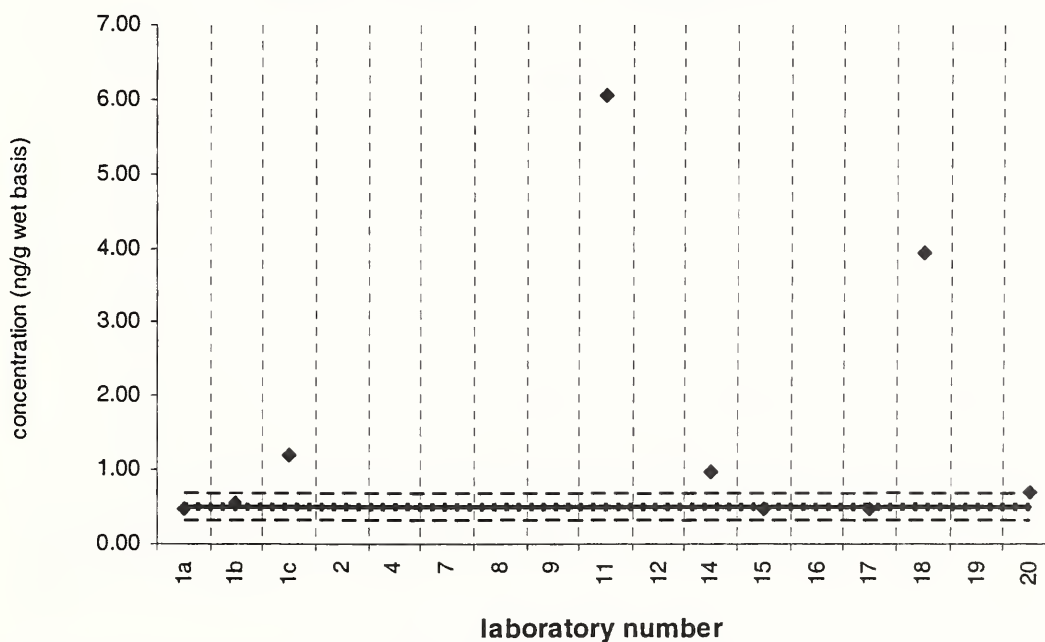
Lab 11-
30.7

fluorene

SRM 1974b

Certified Value = 0.494 ± 0.036 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 9



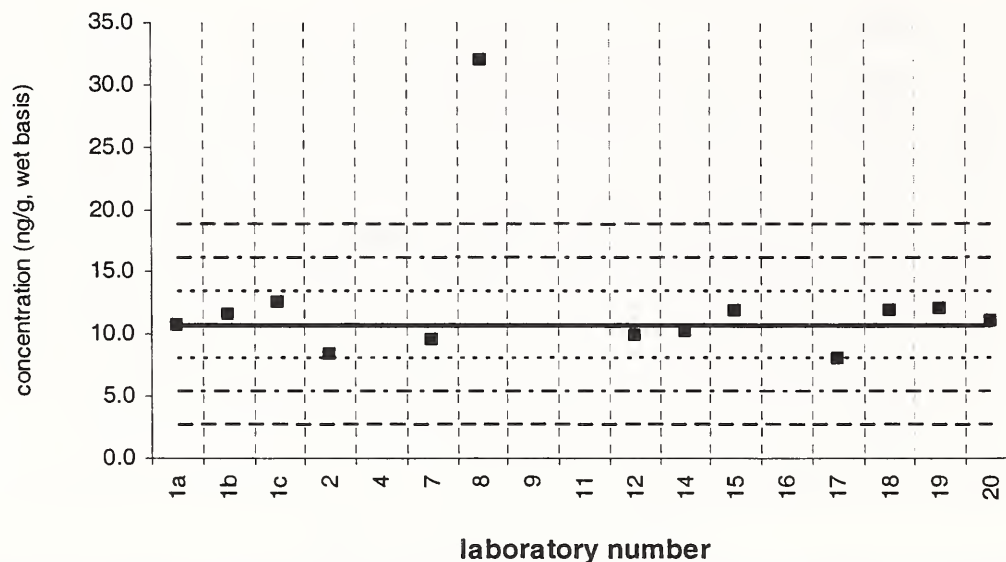
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

phenanthrene

Tissue XI (QA03TIS11)

Assigned value = 10.8 ng/g $s = 1.4$ ng/g 95% CL = 0.9 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 15



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

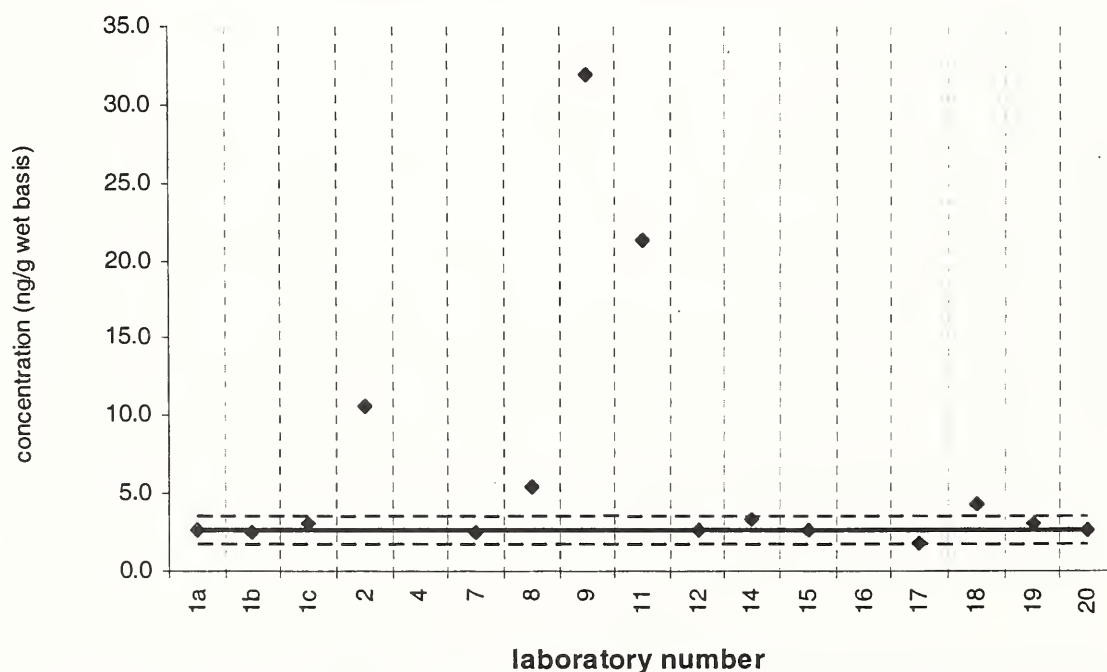
Lab 9 -
157; Lab
11 - 123

phenanthrene

SRM 1974b

Certified Value = 2.580 ± 0.110 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 15



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

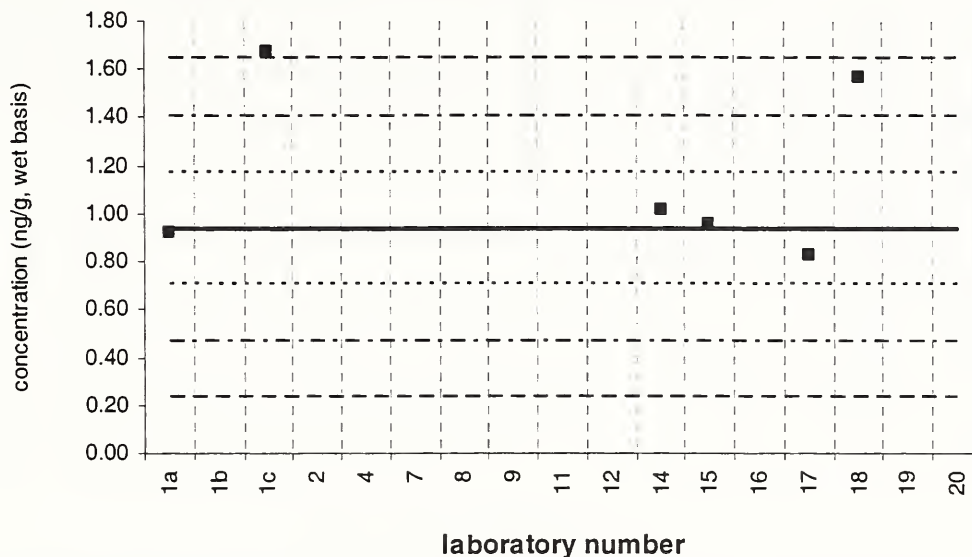
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

anthracene

Tissue XI (QA03TIS11)

Assigned value = 0.939 ng/g $s = 0.022$ ng/g 95% CL = 0.197 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 8



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

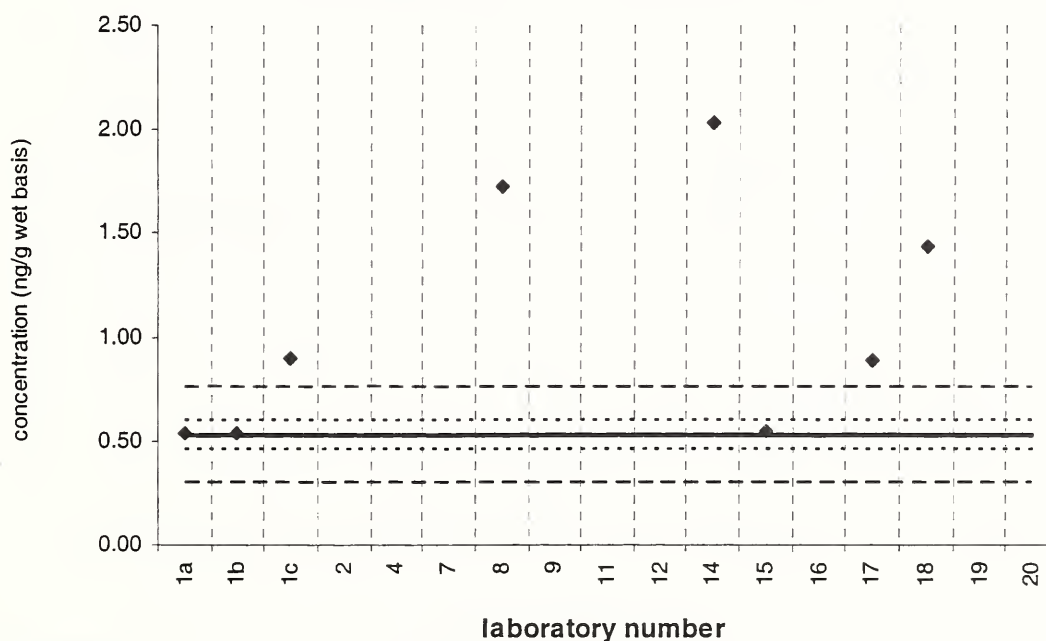
Lab 9 –
17.3; Lab
11 – 25.1

anthracene

SRM 1974b

Certified Value = 0.527 ± 0.071 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 10



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
15.8; Lab
11 – 15.6

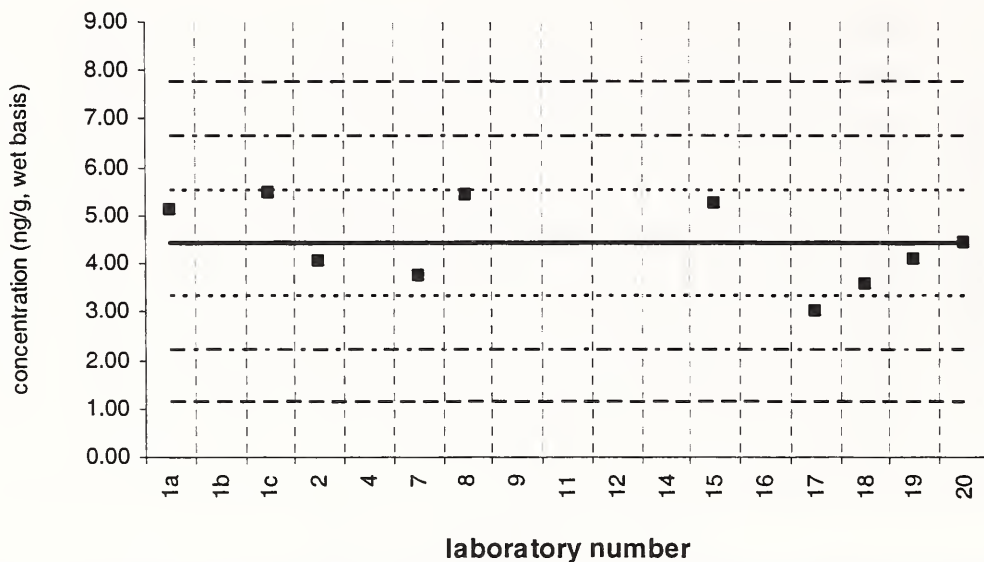
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

1-methylphenanthrene

Tissue XI (QA03TIS11)

Assigned value = 4.42 ng/g $s = 0.86$ ng/g 95% CL = 0.61 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 12



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

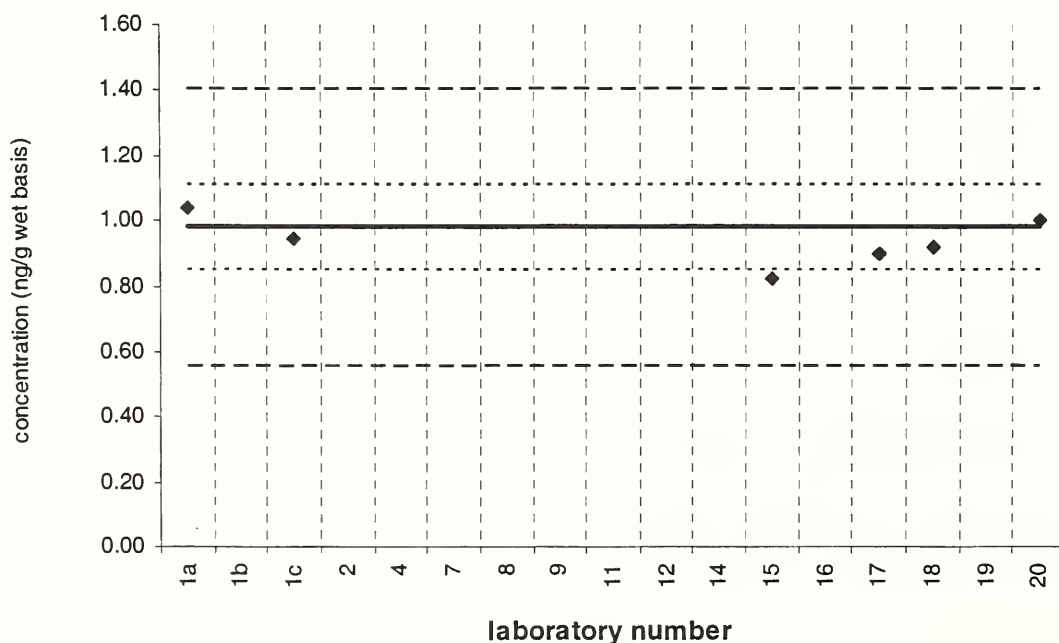
Lab 9 –
40.0; Lab
11 – 57.8

1-methylphenanthrene

SRM 1974b

Certified Value = 0.980 ± 0.130 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 7



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 11 –
9.59

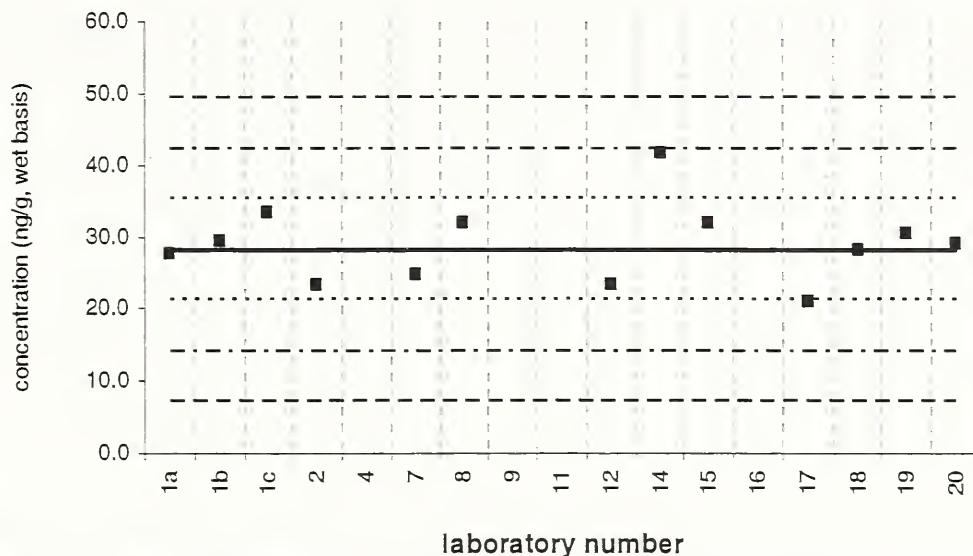
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

fluoranthene

Tissue XI (QA03TIS11)

Assigned value = 28.2 ng/g $s = 3.9$ ng/g 95% CL = 2.6 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 15



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

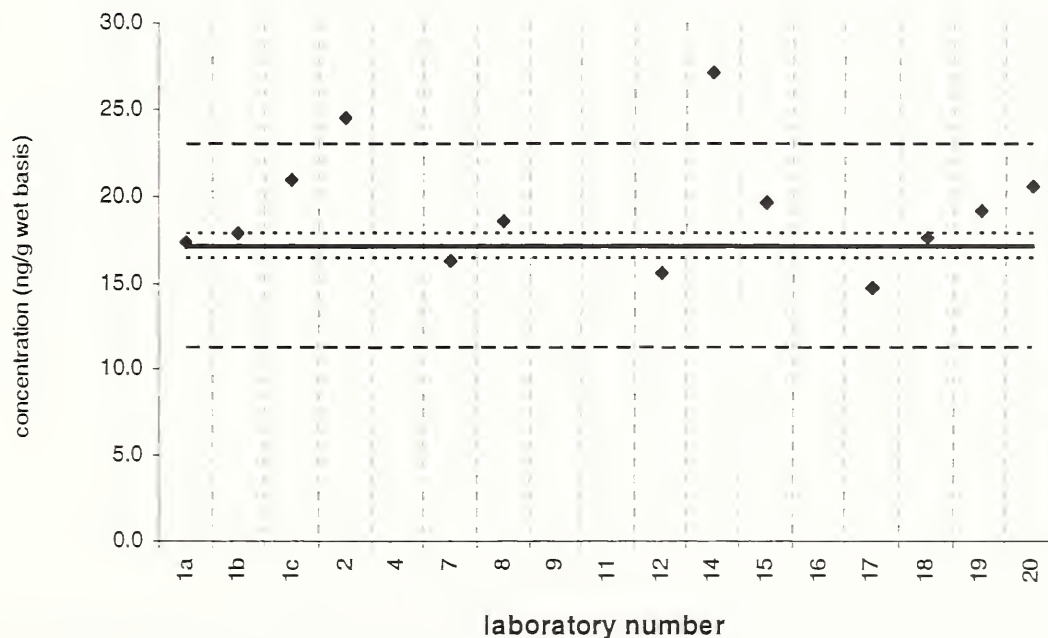
Lab 9 –
252; Lab
11 – 331

fluoranthene

SRM 1974b

Certified Value = 17.1 ± 0.7 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 15



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
120; Lab
11 – 169

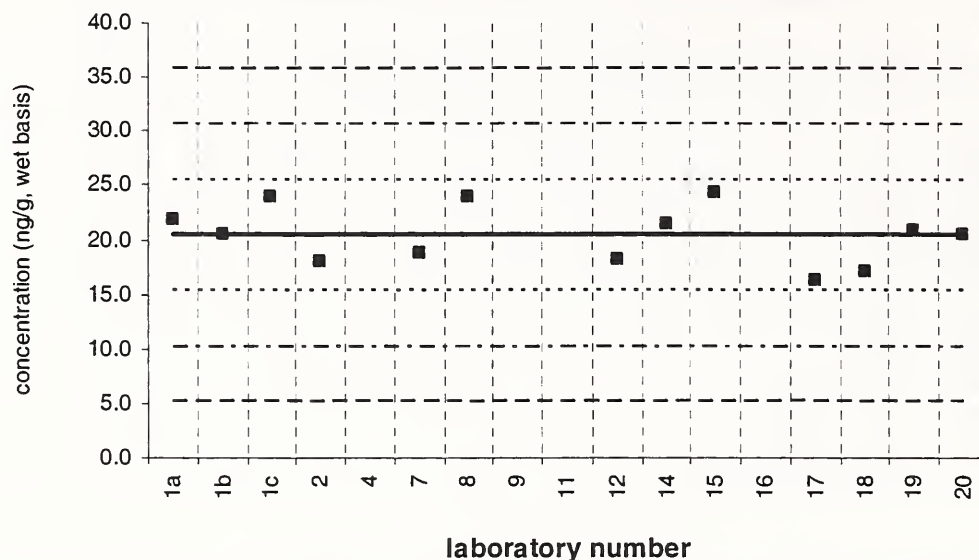
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

pyrene

Tissue XI (QA03TIS11)

Assigned value = 20.4 ng/g $s = 2.7$ ng/g 95% CL = 1.5 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 15



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

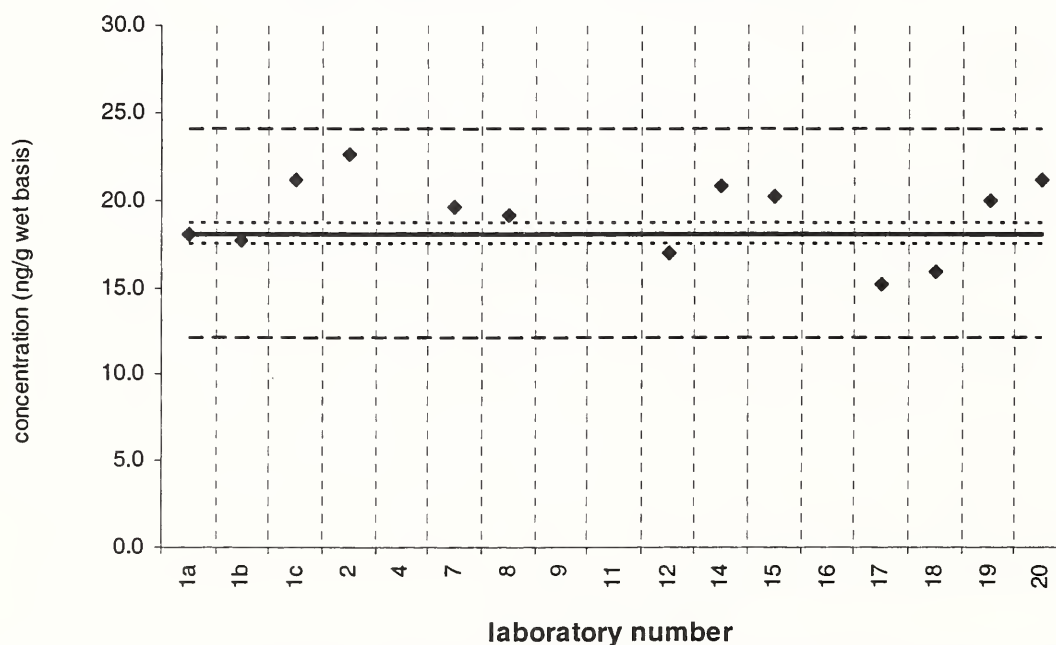
Lab 9 –
191; Lab
11 – 264

pyrene

SRM 1974b

Certified Value = 18.0 ± 0.6 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 15



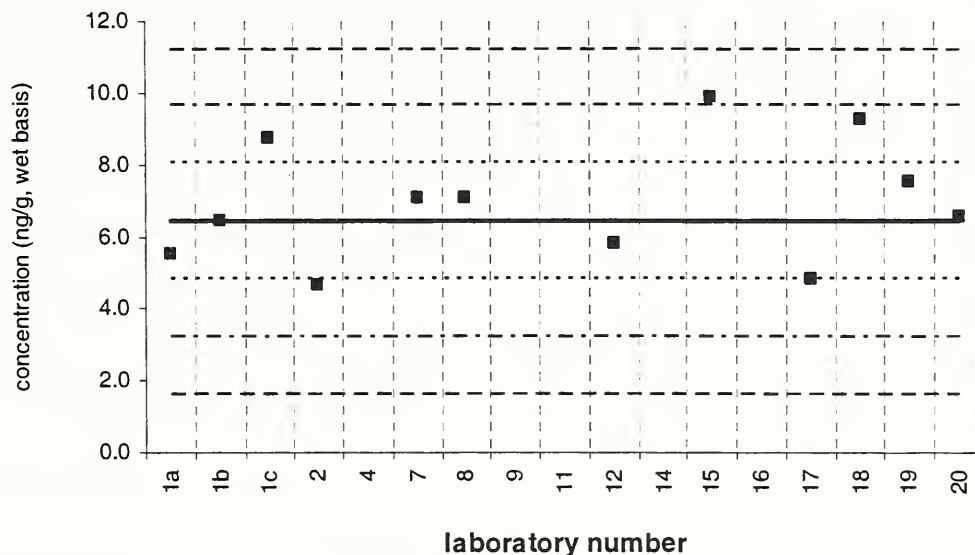
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
132; Lab
11 – 176

Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

benz[a]anthracene**Tissue XI (QA03TIS11)**Assigned value = 6.41 ng/g $s = 1.25$ ng/g 95% CL = 0.90 ng/g (wet basis)

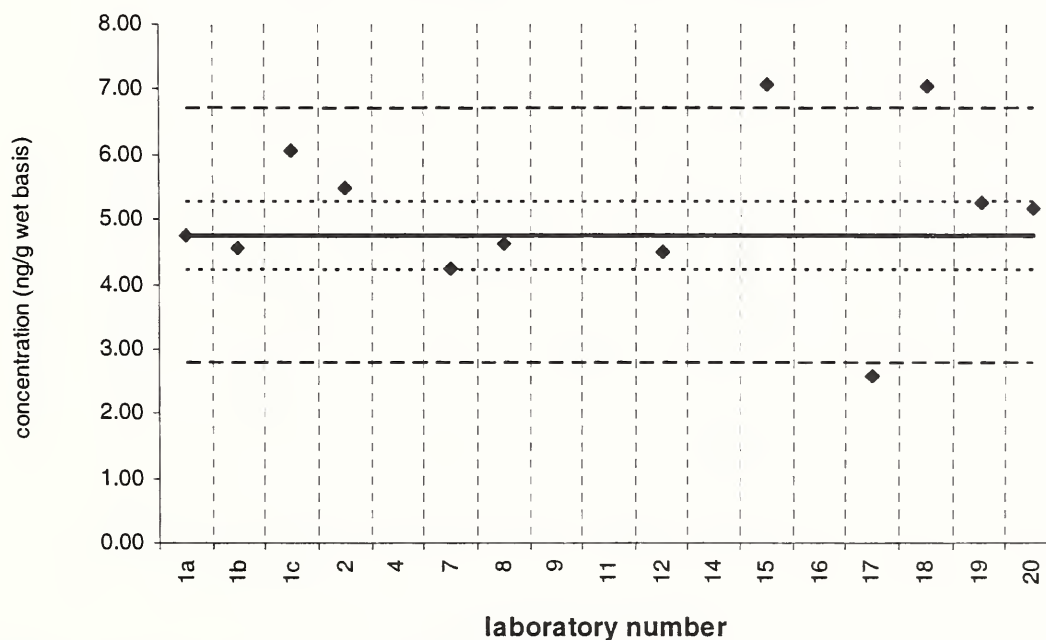
Reported Results: 14 Quantitative Results: 14



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

Lab 9 –
72.7; Lab
11 – 91.2**benz[a]anthracene****SRM 1974b**Certified Value = 4.74 ± 0.53 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 14



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
48.7; Lab
11 – 56.5

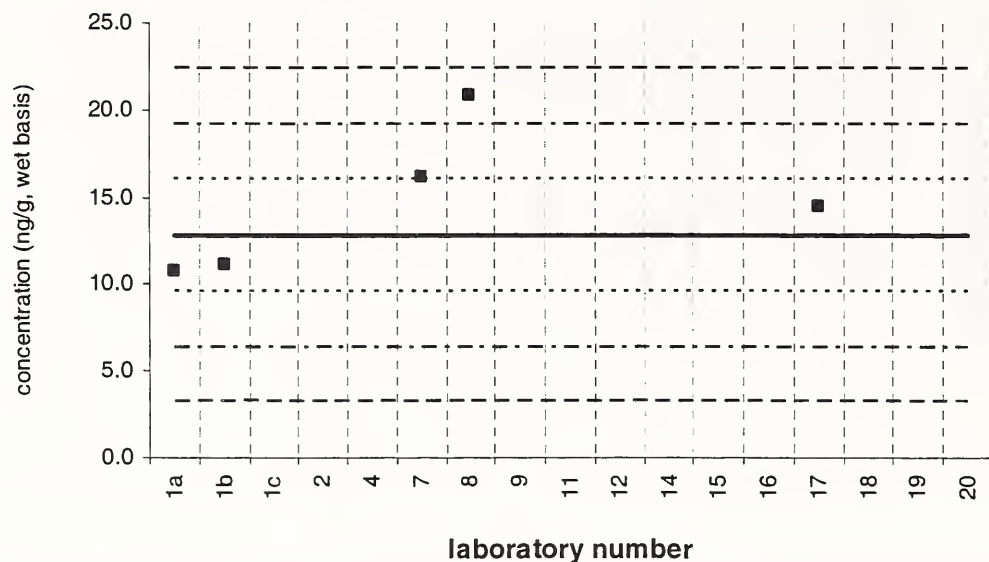
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

chrysene

Tissue XI (QA03TIS11)

Assigned value = 12.8 ng/g $s = 2.4$ ng/g 95% CL = 6.0 ng/g (wet basis)

Reported Results: 9 Quantitative Results: 7



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

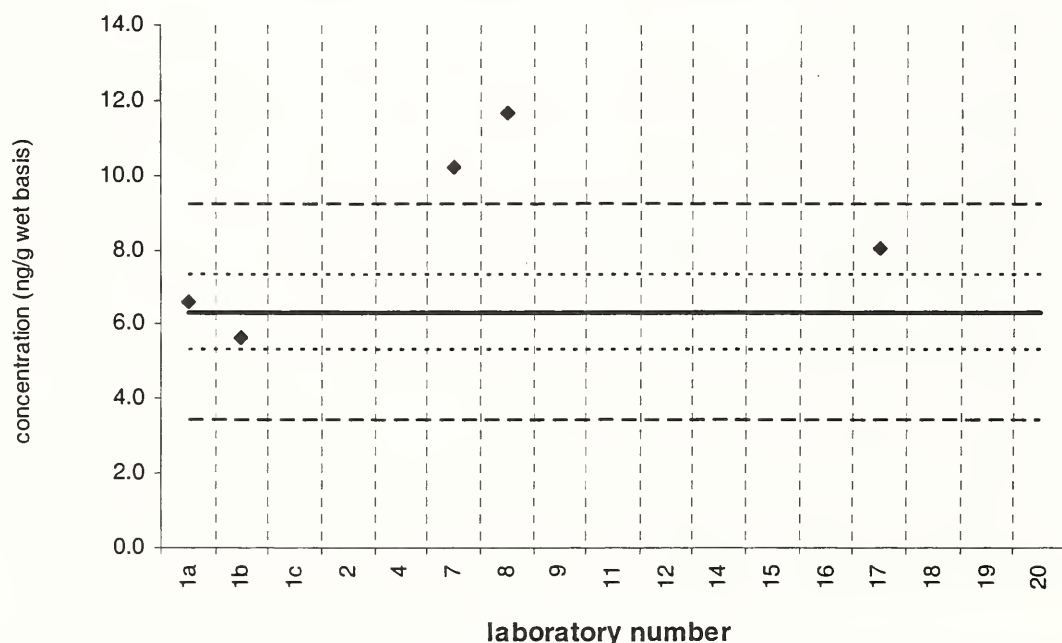
Lab 9 –
173; Lab
11 – 205

chrysene

SRM 1974b

Certified Value = 6.30 ± 1.00 ng/g (wet basis)

Reported Results: 9 Quantitative Results: 7



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
87.8; Lab
11 – 98.3

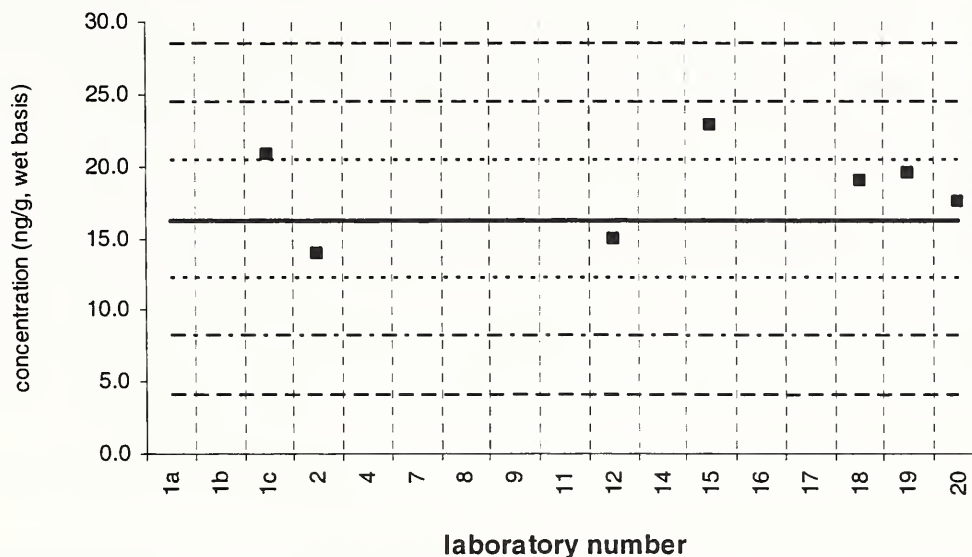
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

chrysene/triphenylene

Tissue XI (QA03TIS11)

Assigned value = 16.3 ng/g $s = 2.8$ ng/g 95% CL = 2.6 ng/g (wet basis)

Reported Results: 7 Quantitative Results: 7



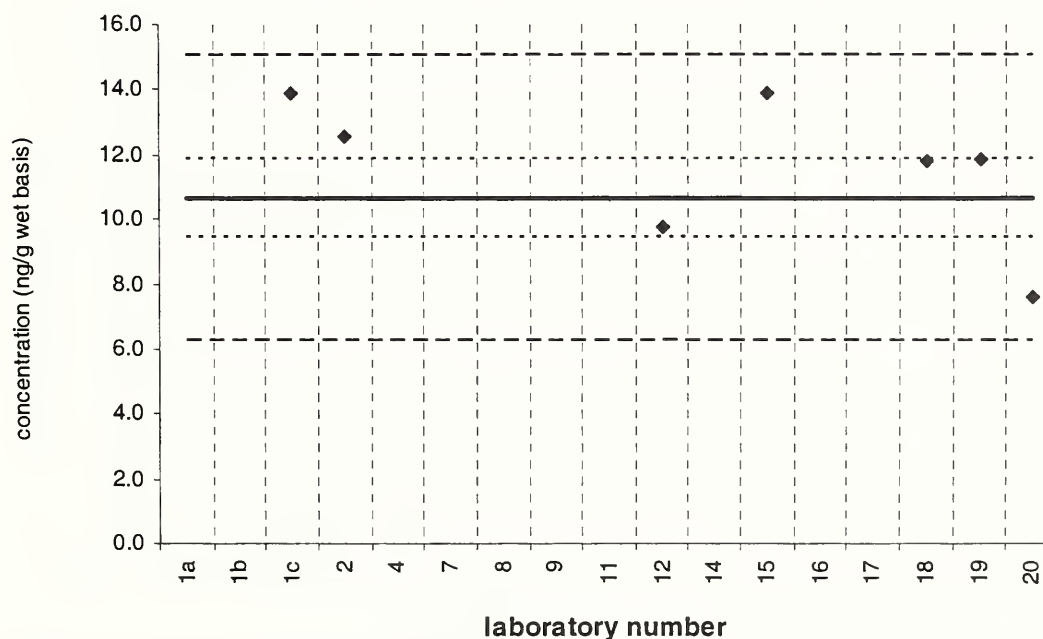
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

chrysene/triphenylene

SRM 1974b

Target Value = 10.6 ± 1.2 ng/g (wet basis)

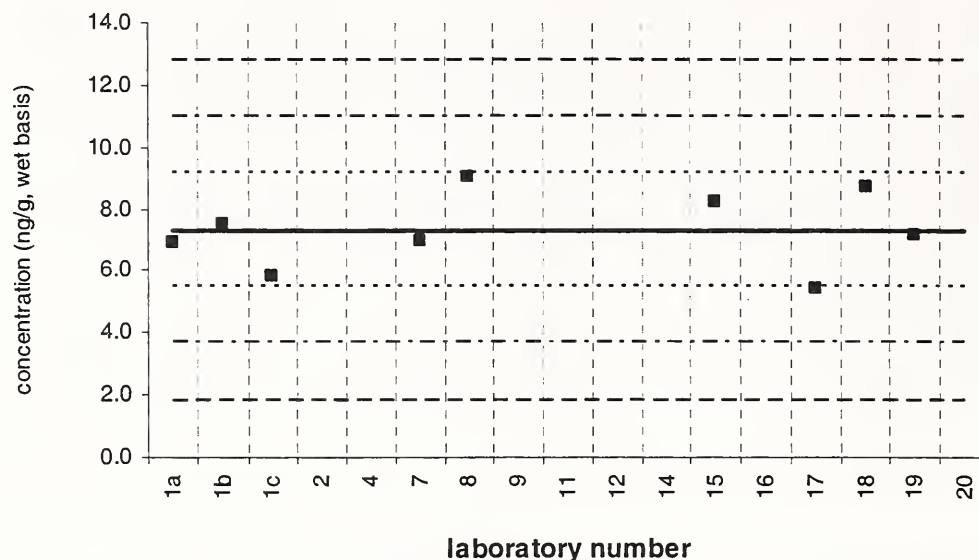
Reported Results: 7 Quantitative Results: 7



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

benzo[b]fluoranthene**Tissue XI (QA03TIS11)**Assigned value = 7.32 ng/g $s = 1.23$ ng/g 95% CL = 0.94 ng/g (wet basis)

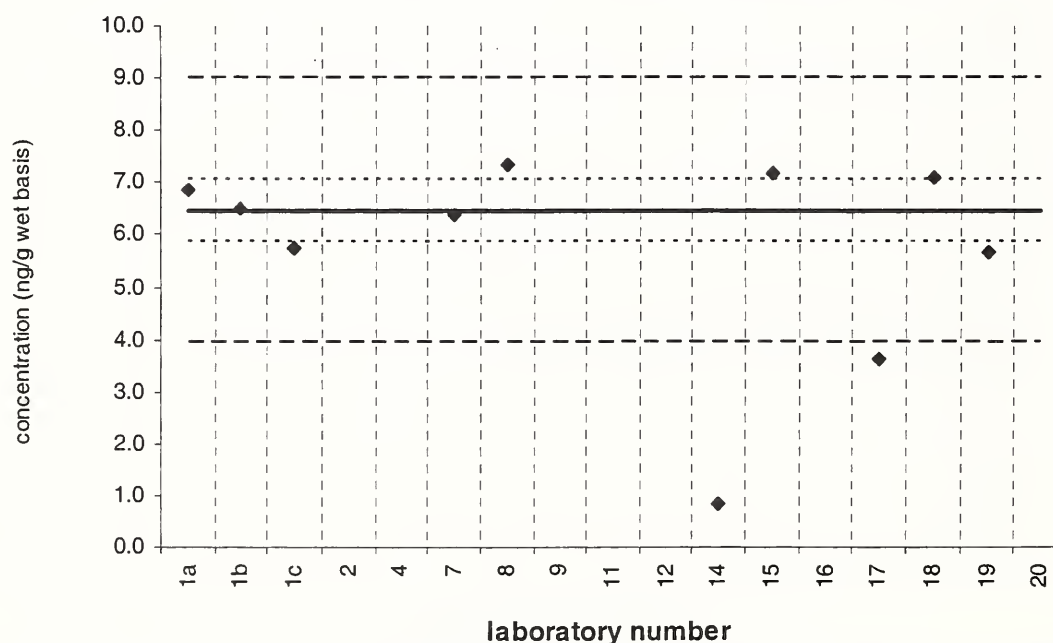
Reported Results: 13 Quantitative Results: 11



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

Lab 9 –
106; Lab
11 – 122**benzo[b]fluoranthene****SRM 1974b**Certified Value = 6.46 ± 0.59 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 12



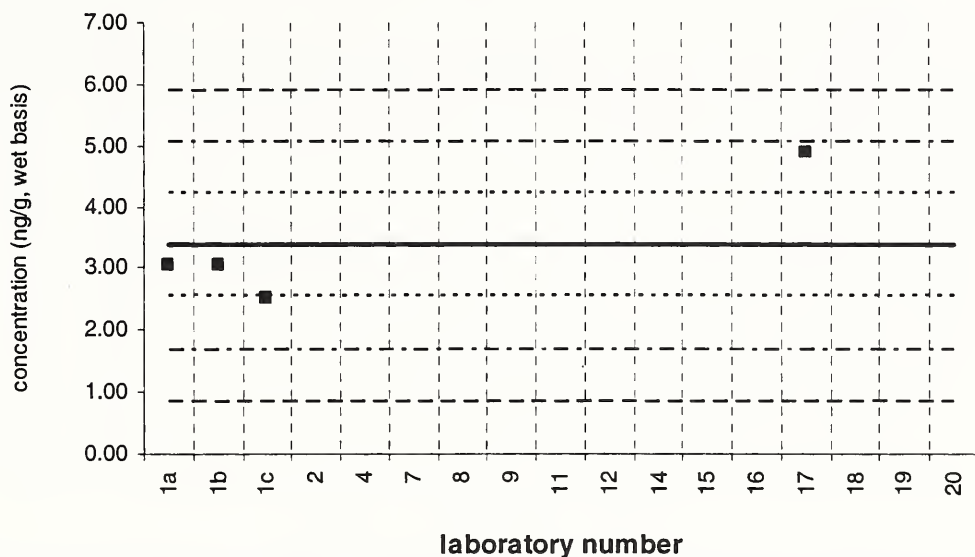
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
80.1; Lab
11 – 79.5

Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

benzo[j]fluoranthene**Tissue XI (QA03TIS11)**Assigned value = 3.38 ng/g $s = 1.04$ ng/g 95% CL = 1.65 ng/g (wet basis)

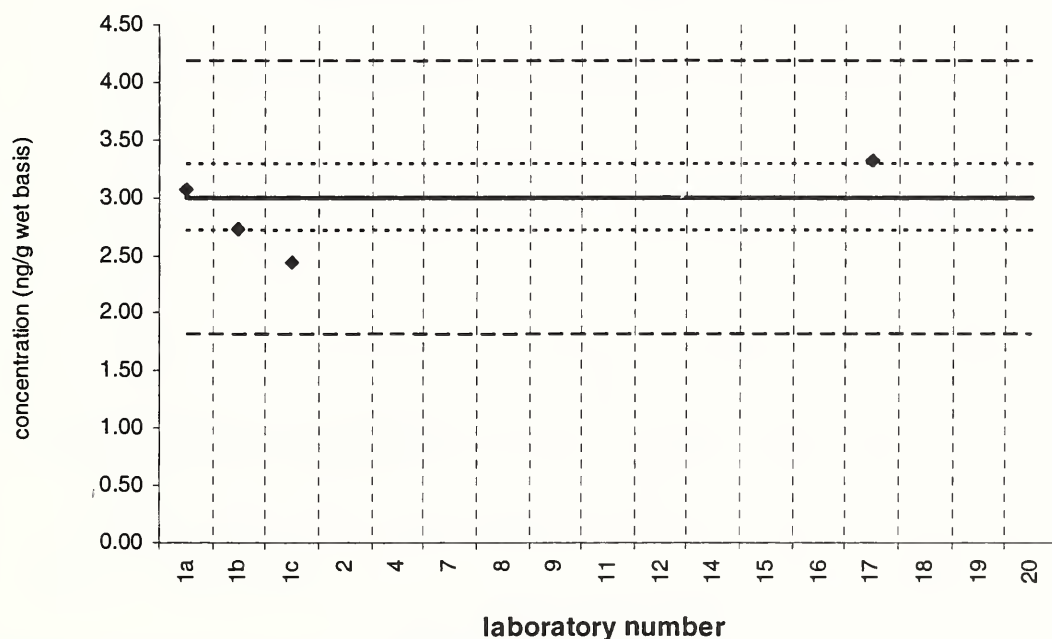
Reported Results: 6 Quantitative Results: 4



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

benzo[j]fluoranthene**SRM 1974b**Certified Value = 2.99 ± 0.29 ng/g (wet basis)

Reported Results: 6 Quantitative Results: 4



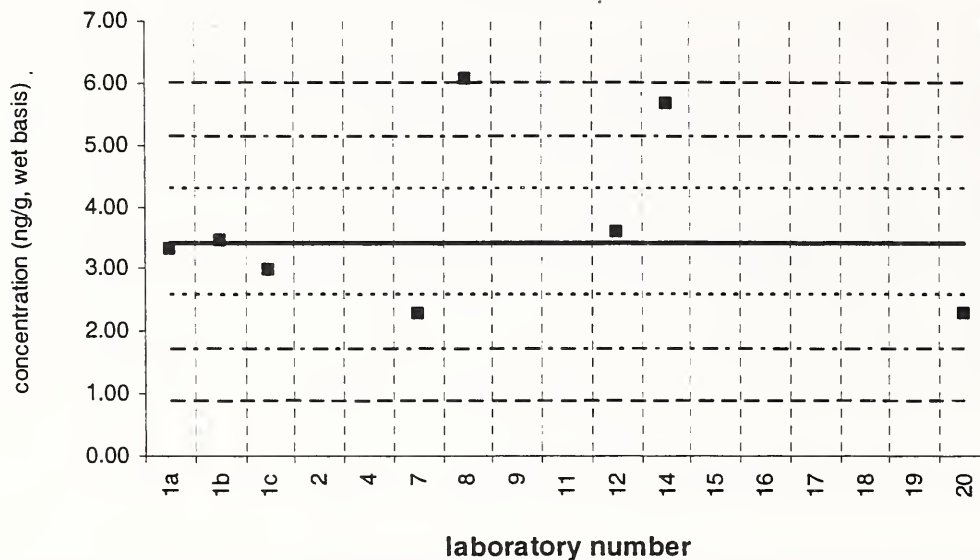
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

benzo[k]fluoranthene

Tissue XI (QA03TIS11)

Assigned value = 3.43 ng/g $s = 1.28$ ng/g 95% CL = 1.19 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 10



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

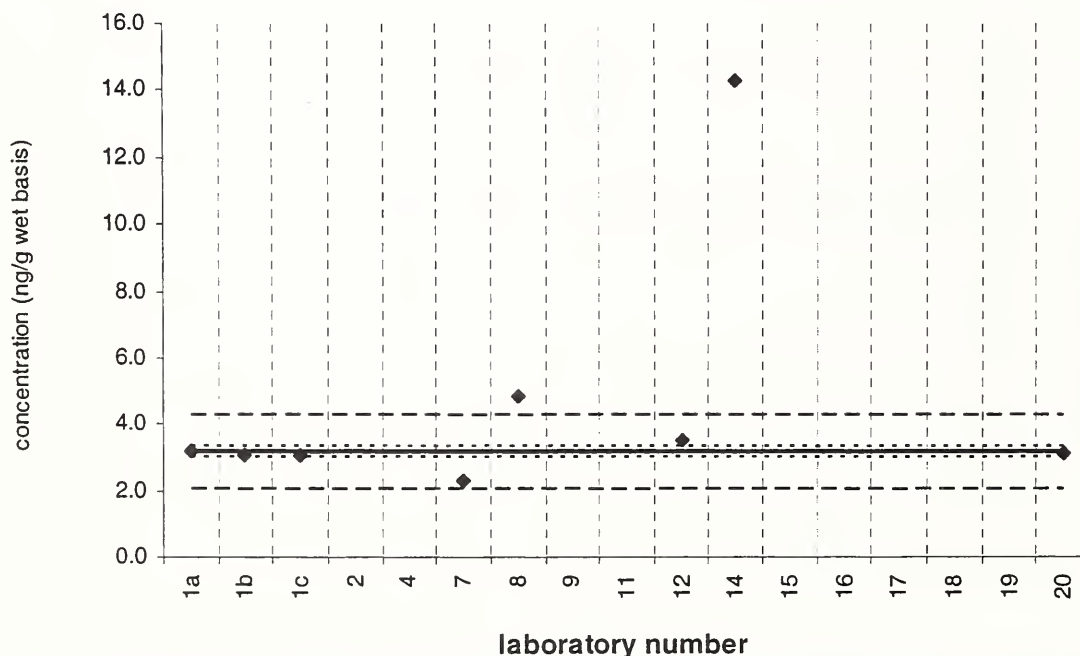
Lab 9 –
28.1; Lab
11 – 27.5

benzo[k]fluoranthene

SRM 1974b

Certified Value = 3.16 ± 0.18 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 10



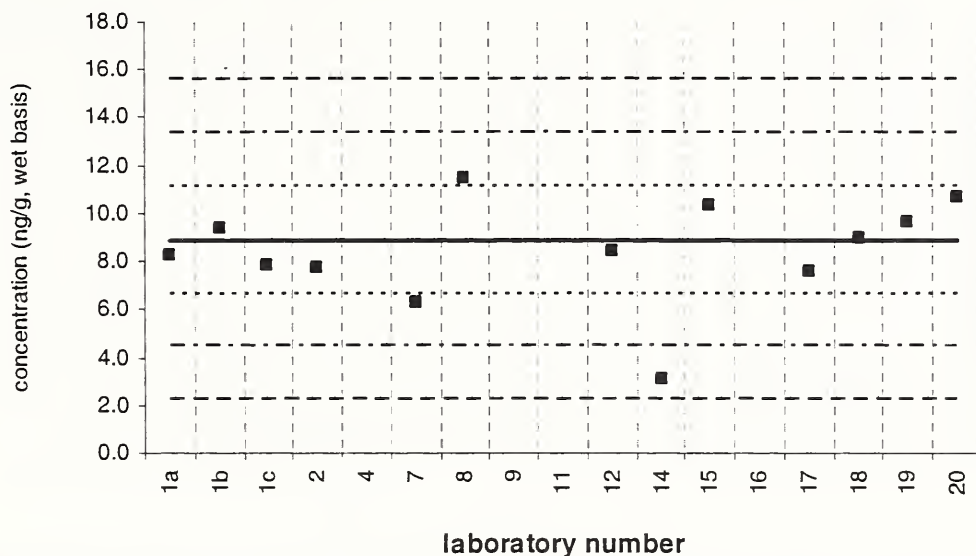
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
22.7; Lab
11 – 24.0

Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

benzo[e]pyrene**Tissue XI (QA03TIS11)**Assigned value = 8.89 ng/g $s = 1.48$ ng/g 95% CL = 0.94 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 15

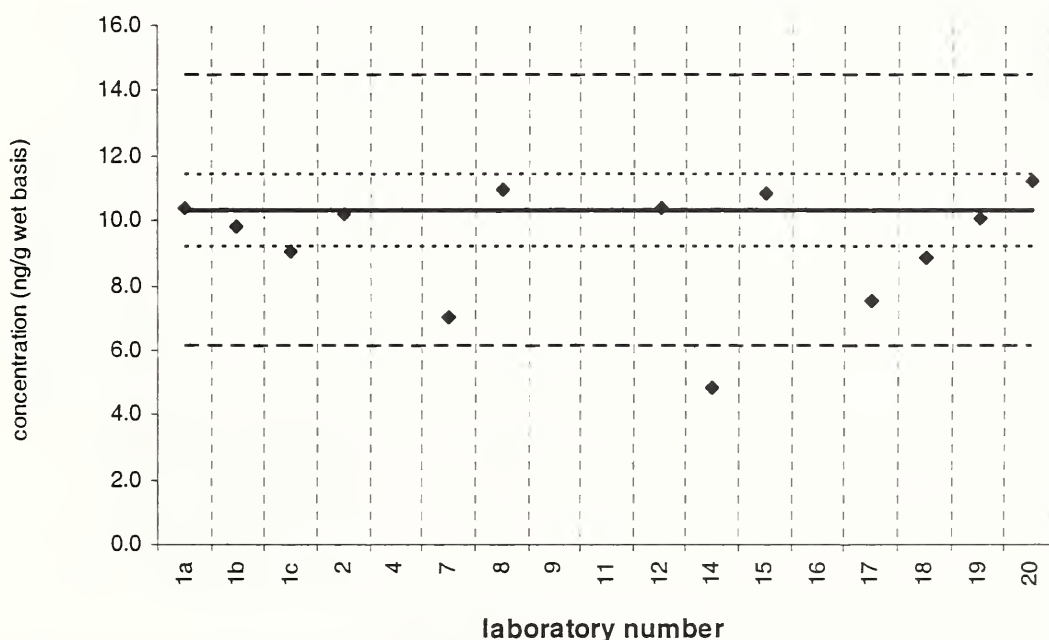


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

Lab 9 –
85.0; Lab
11 – 95.0

benzo[e]pyrene**SRM 1974b**Certified Value = 10.3 ± 1.1 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 15



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
61.6; Lab
11 – 85.0

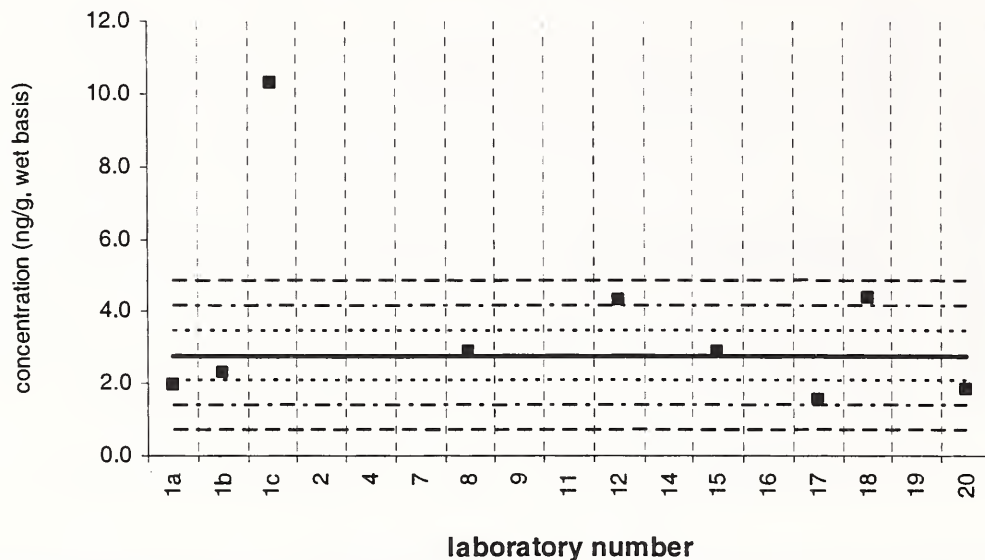
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

benzo[a]pyrene

Tissue XI (QA03TIS11)

Assigned value = 2.76 ng/g s = 1.07 ng/g 95% CL = 0.89 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 10



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

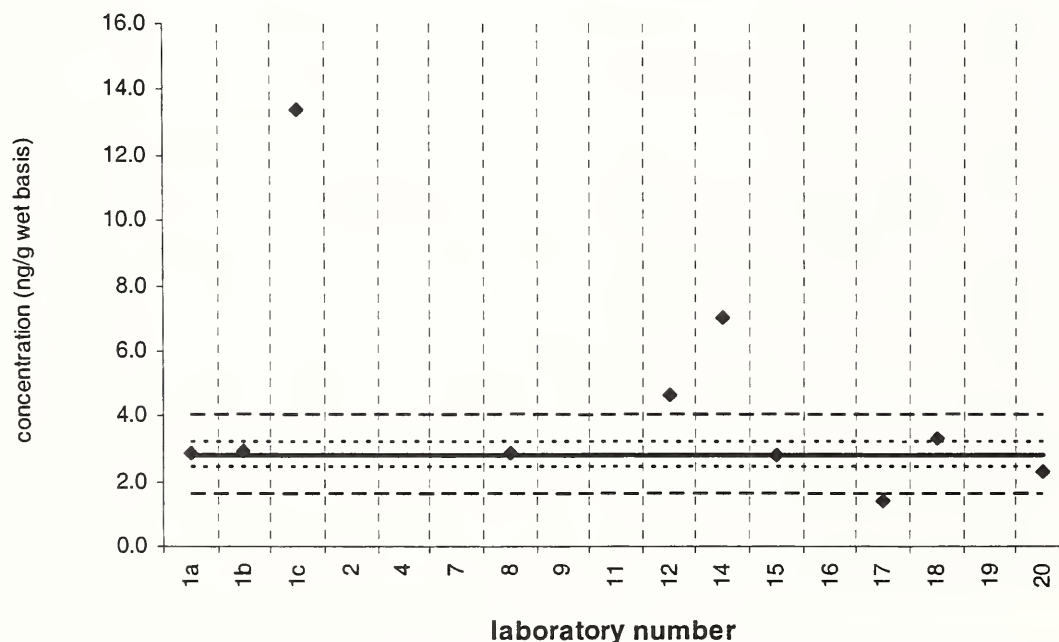
Lab 11 –
34.5

benzo[a]pyrene

SRM 1974b

Certified Value = 2.80 ± 0.38 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 12



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

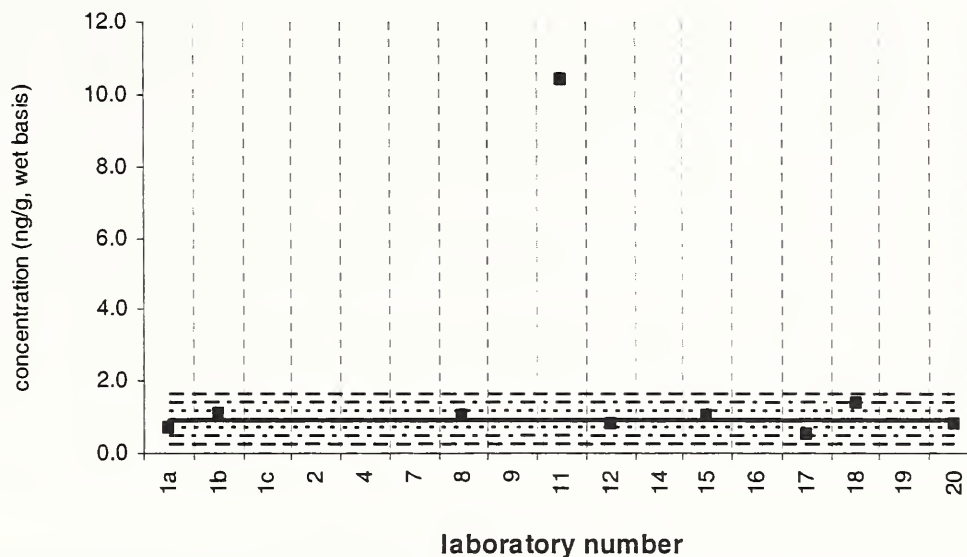
Lab 9 –
79.2; Lab
11 – 31.4

perylene

Tissue XI (QA03TIS11)

Assigned value = 0.914 ng/g $s = 0.257$ ng/g 95% CL = 0.215 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 9



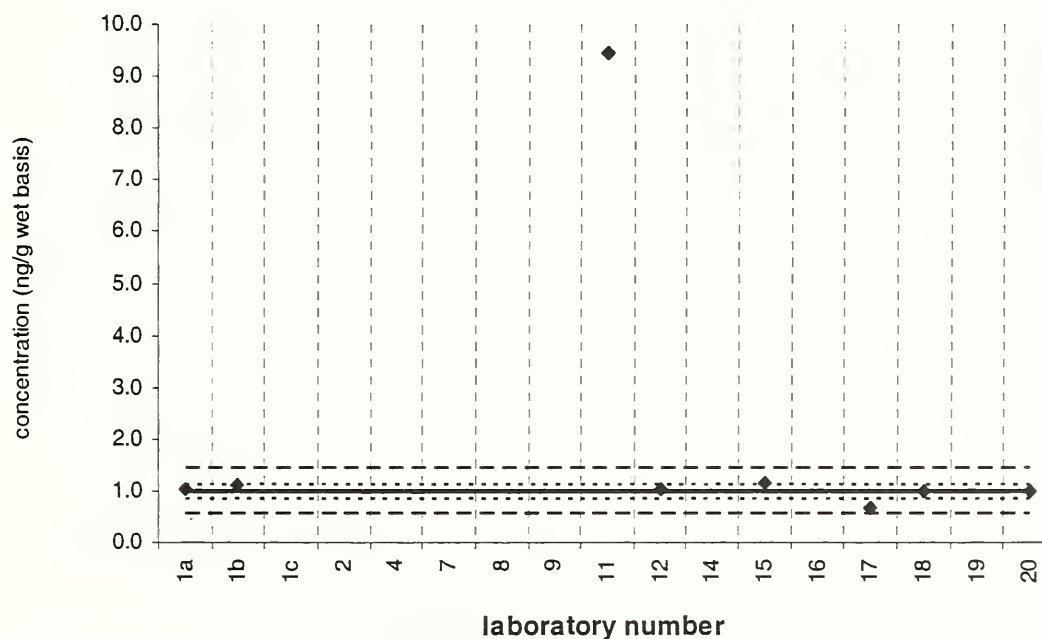
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

perylene

SRM 1974b

Certified Value = 0.990 ± 0.140 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 8



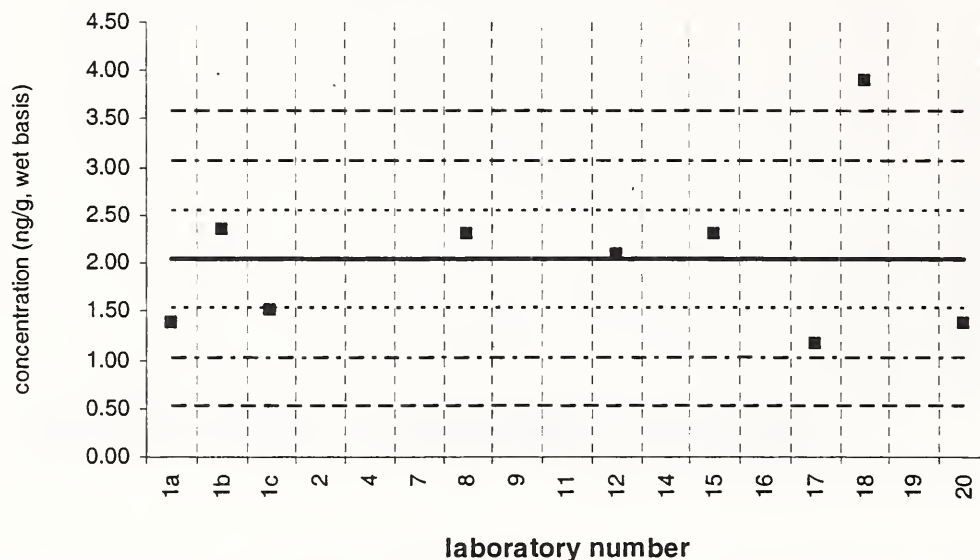
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

indeno[1,2,3-cd]pyrene

Tissue XI (QA03TIS11)

Assigned value = 2.04 ng/g s = 0.84 ng/g 95% CL = 0.65 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 11



Solid line : exercise assigned value (EAV); dotted line: z=±1 (25% from EAV); dotted/dashed line: z=±2 (50% from EAV); dashed line: z=±3 (75% from EAV)

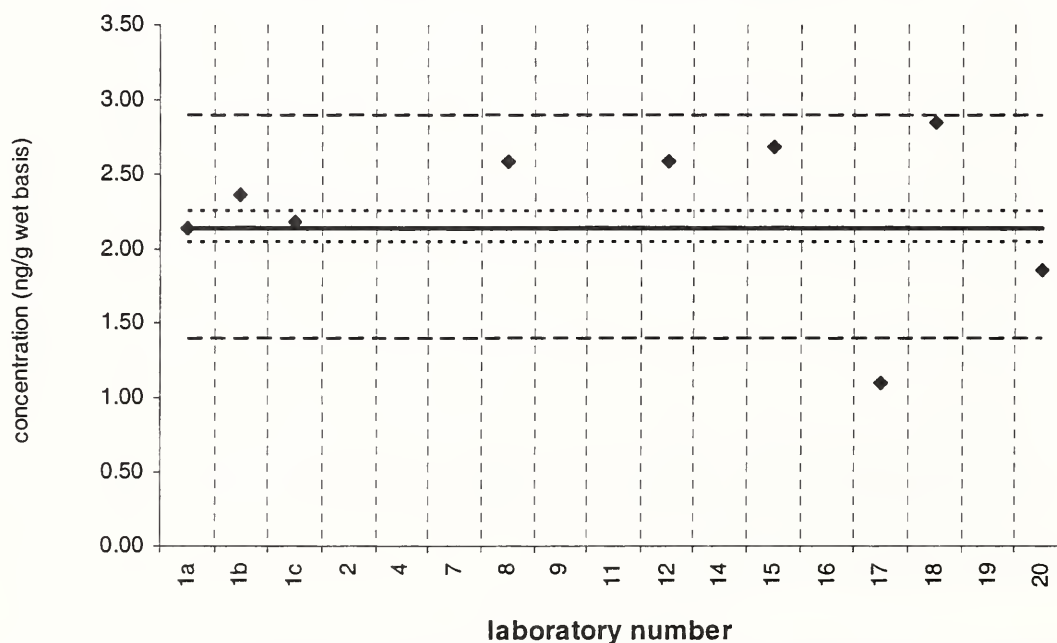
Lab 9 –
16.2; Lab
11 – 18.5

indeno[1,2,3-cd]pyrene

SRM 1974b

Certified Value = 2.14 ± 0.11 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 11



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
18.4; Lab
11 – 21.3

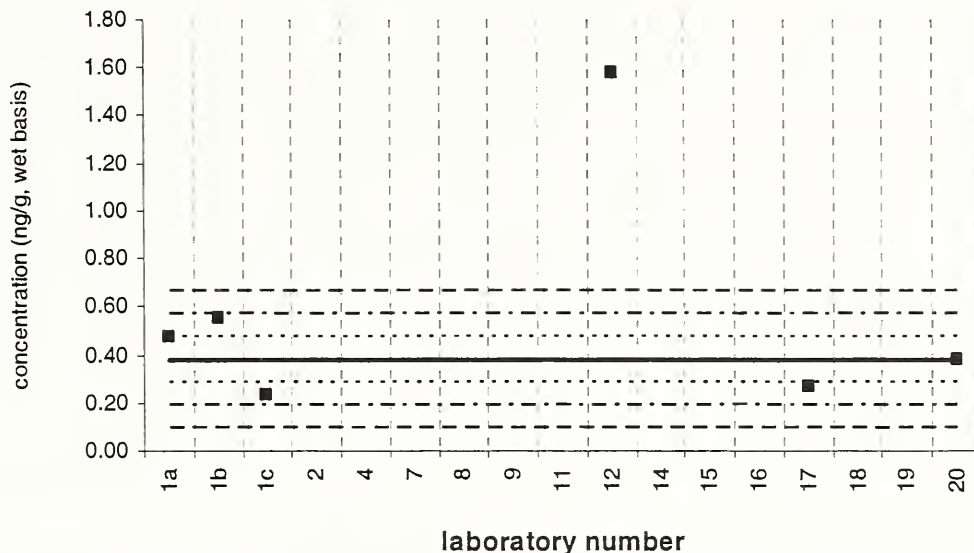
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

dibenz[a,h]anthracene

Tissue XI (QA03TIS11)

Assigned value = 0.380 ng/g $s = 0.137$ ng/g 95% CL = 0.170 ng/g (wet basis)

Reported Results: 12 Quantitative Results: 7



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

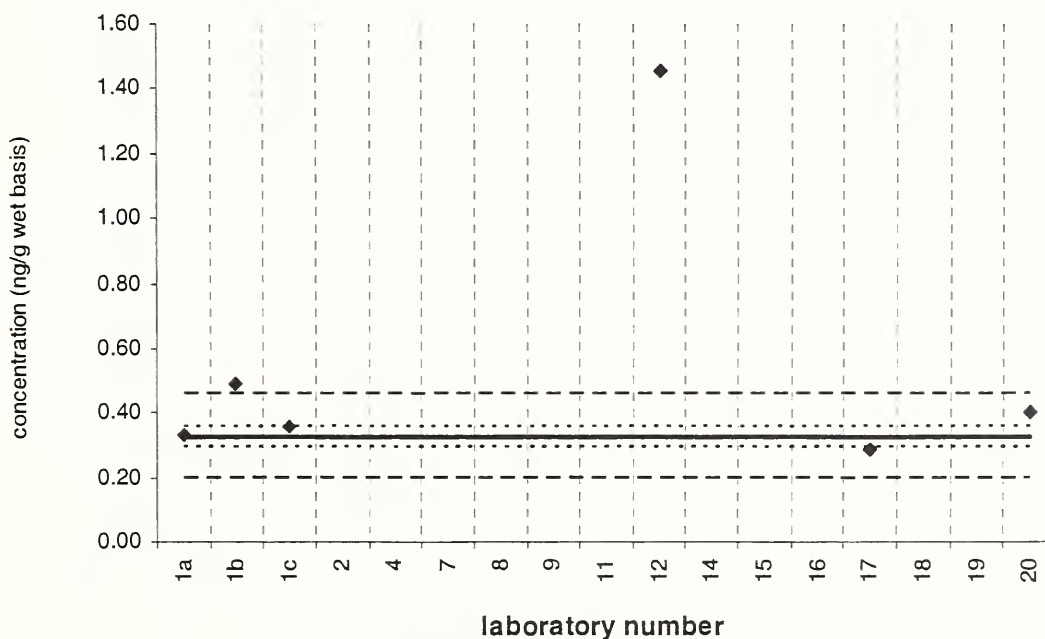
Lab 11 –
4.37

dibenz[a,h]anthracene

SRM 1974b

Certified Value = 0.327 ± 0.031 ng/g (wet basis)

Reported Results: 12 Quantitative Results: 7



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

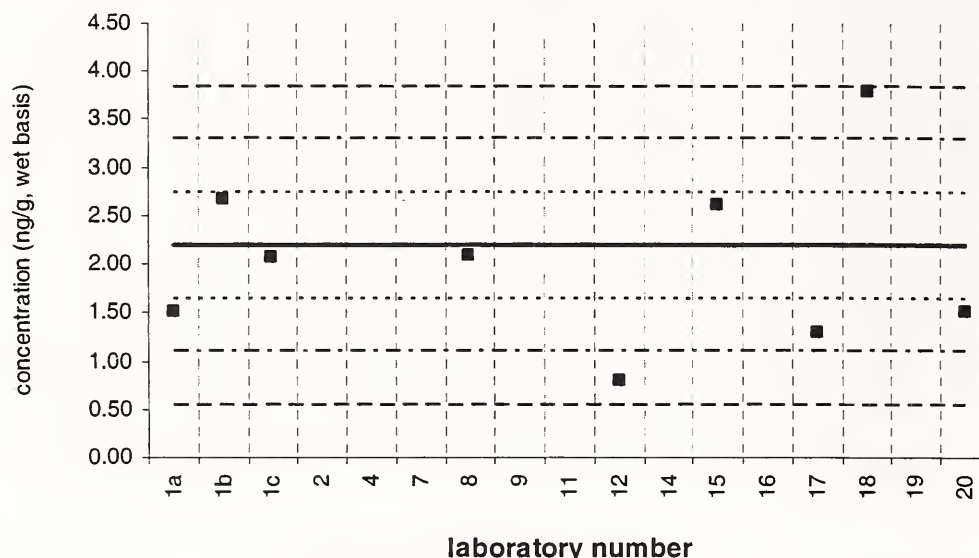
Lab 11 –
4.31

benzo[ghi]perylene

Tissue XI (QA03TIS11)

Assigned value = 2.19 ng/g $s = 0.82$ ng/g 95% CL = 0.69 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 11



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

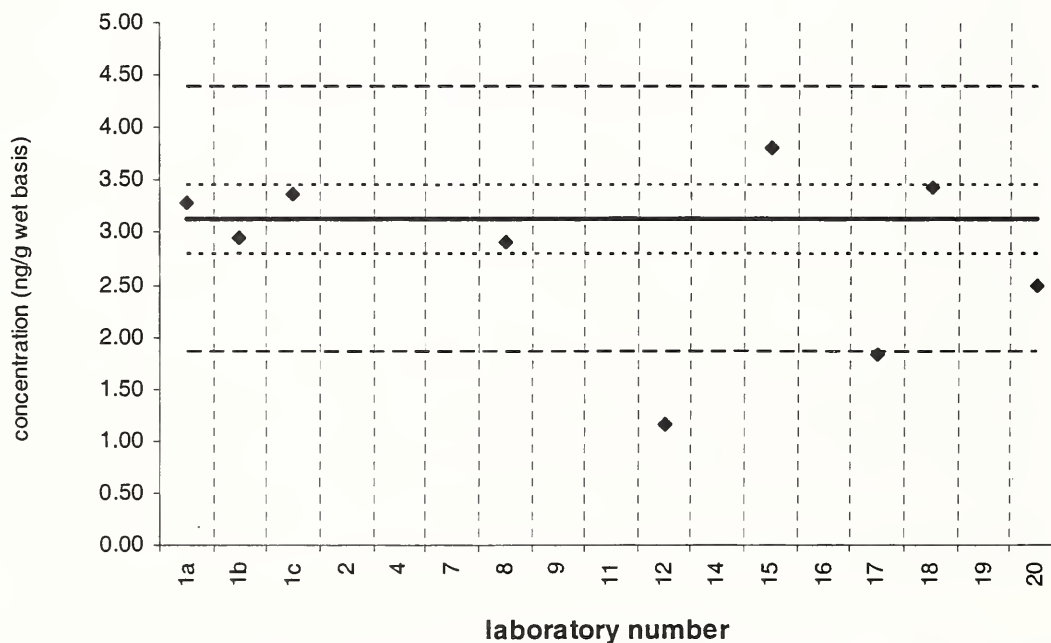
Lab 9 –
17.1; Lab
11 – 22.5

benzo[ghi]perylene

SRM 1974b

Certified Value = 3.12 ± 0.33 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 11



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
22.6; Lab
11 – 29.7

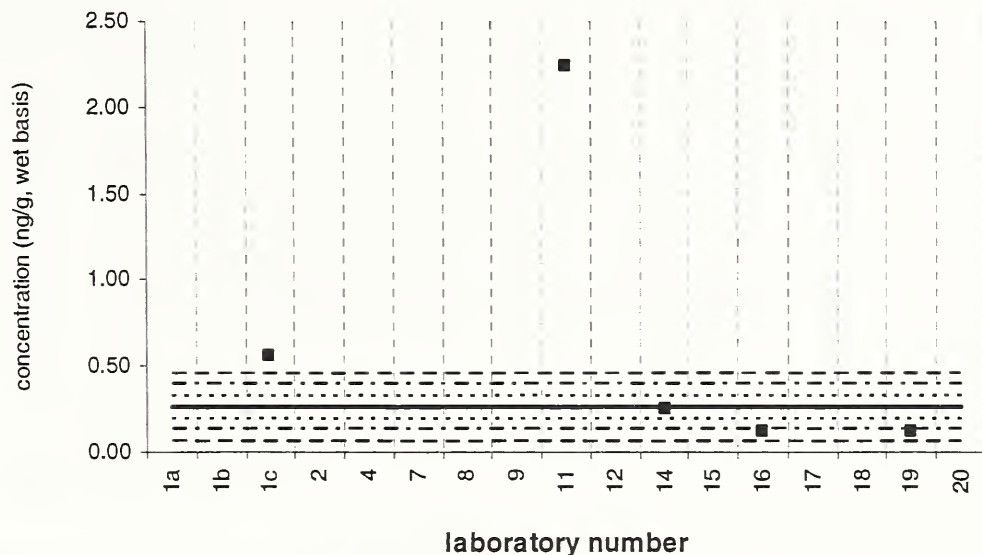
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

heptachlor

Tissue XI (QA03TIS11)

Assigned value = 0.263 ng/g $s = 0.211$ ng/g 95% CL = 0.335 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 5



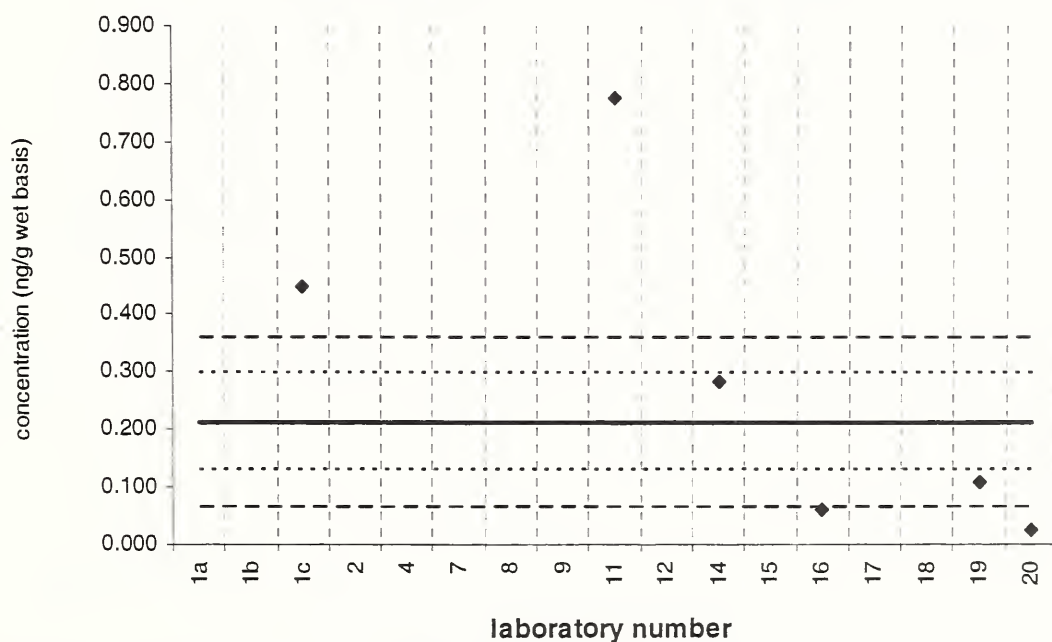
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

heptachlor

SRM 1974b

Reference Value = 0.212 ± 0.084 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 6



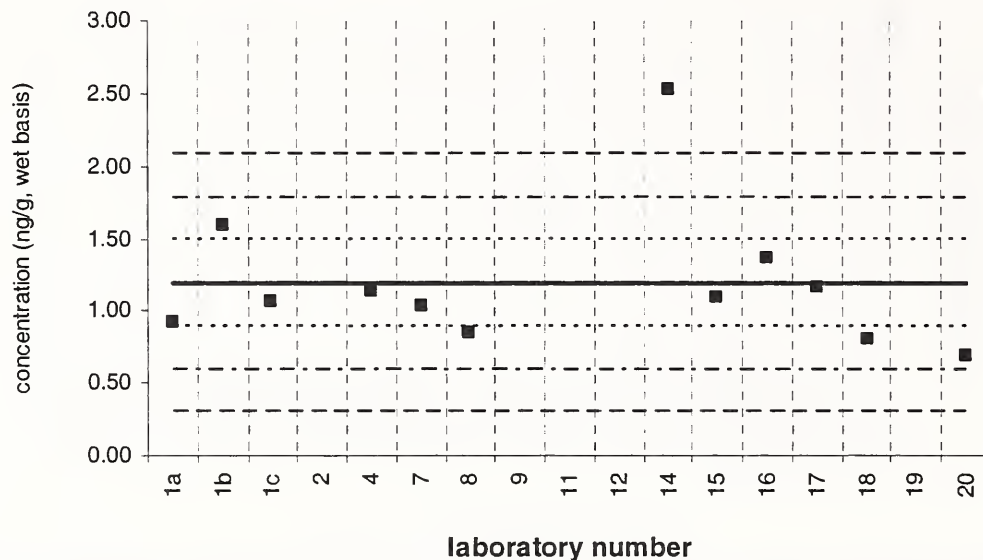
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

gamma-chlordane

Tissue XI (QA03TIS11)

Assigned value = 1.19 ng/g s = 0.52 ng/g 95% CL = 0.35 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 14



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

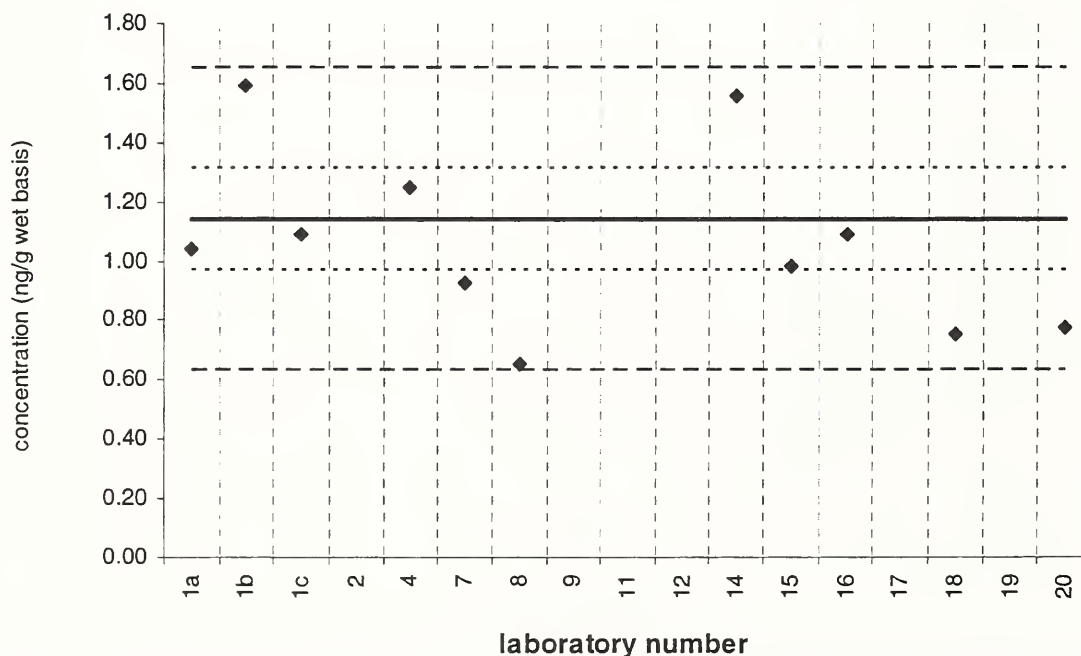
Lab 9 –
17.0; Lab
11 – 15.6

gamma-chlordane

SRM 1974b

Certified Value = 1.14 ± 0.17 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 13



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
16.9; Lab
11 – 11.4

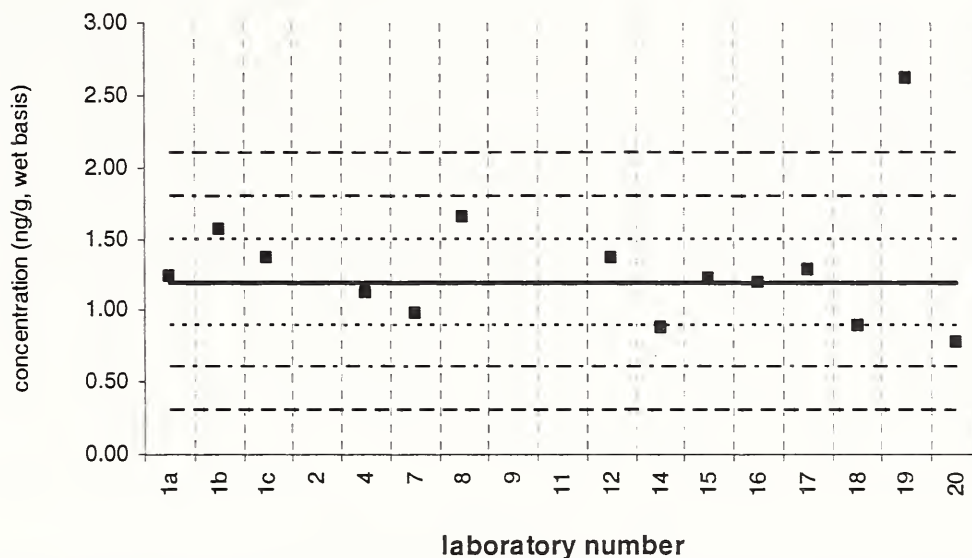
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

cis-chlordane (alpha-chlordane)

Tissue XI (QA03TIS11)

Assigned value = 1.19 ng/g $s = 0.26$ ng/g 95% CL = 0.16 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 16



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

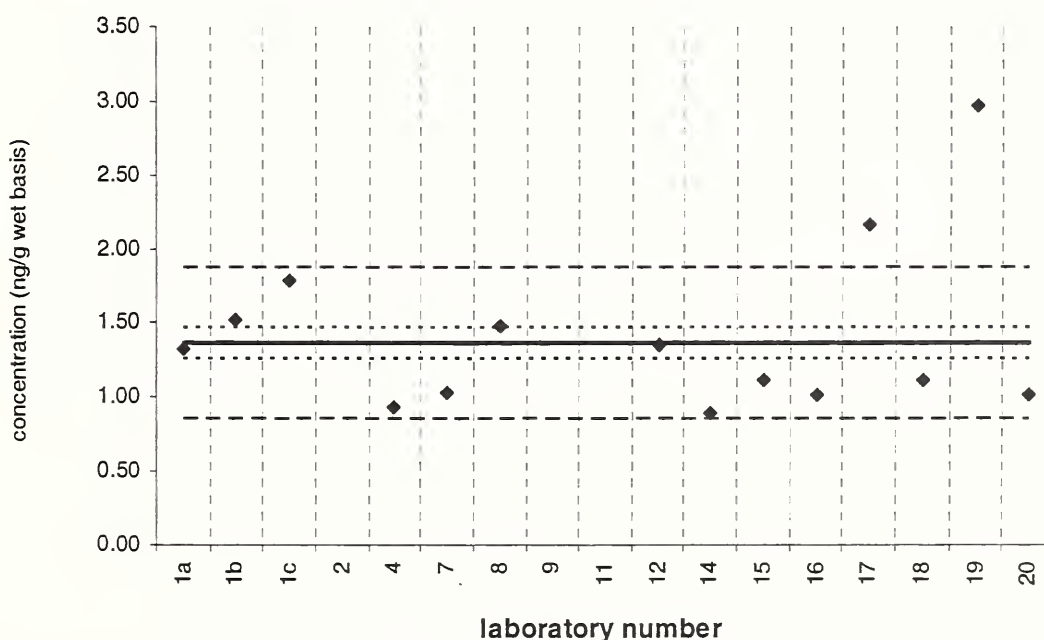
Lab 9 –
11.2; Lab
11 – 15.2

cis-chlordane (alpha-chlordane)

SRM 1974b

Certified Value = 1.36 ± 0.10 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 16



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
10.1; Lab
11 – 12.4

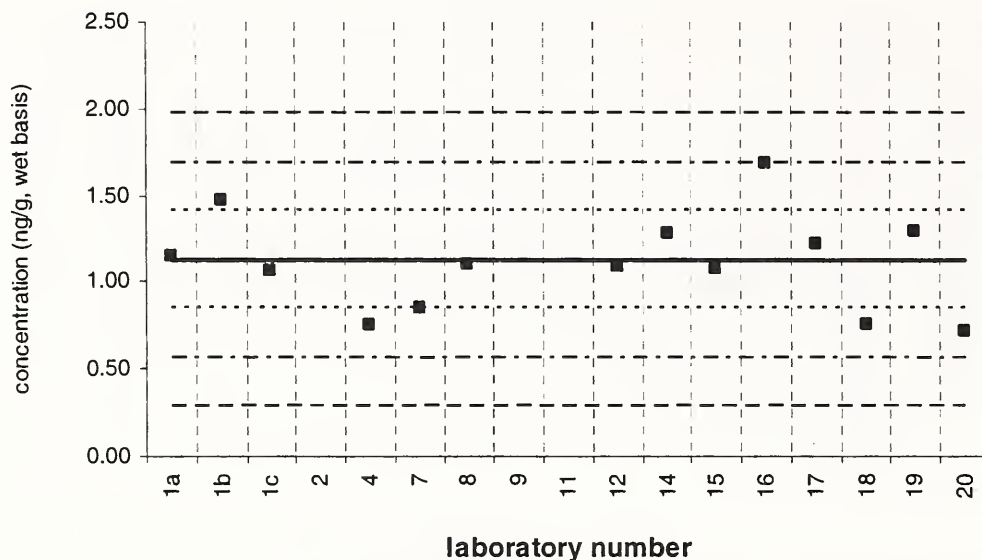
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

trans-nonachlor

Tissue XI (QA03TIS11)

Assigned value = 1.13 ng/g $s = 0.28$ ng/g 95% CL = 0.18 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 16



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

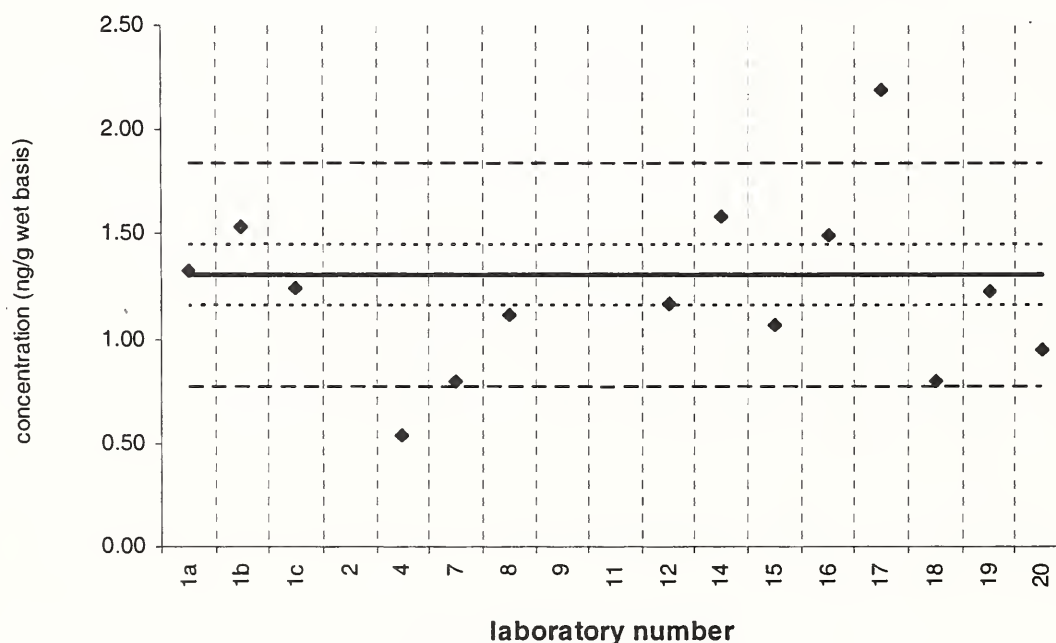
Lab 9 –
9.85; Lab
11 – 14.7

trans-nonachlor

SRM 1974b

Certified Value = 1.30 ± 0.14 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 16



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
10.7; Lab
11 – 12.8

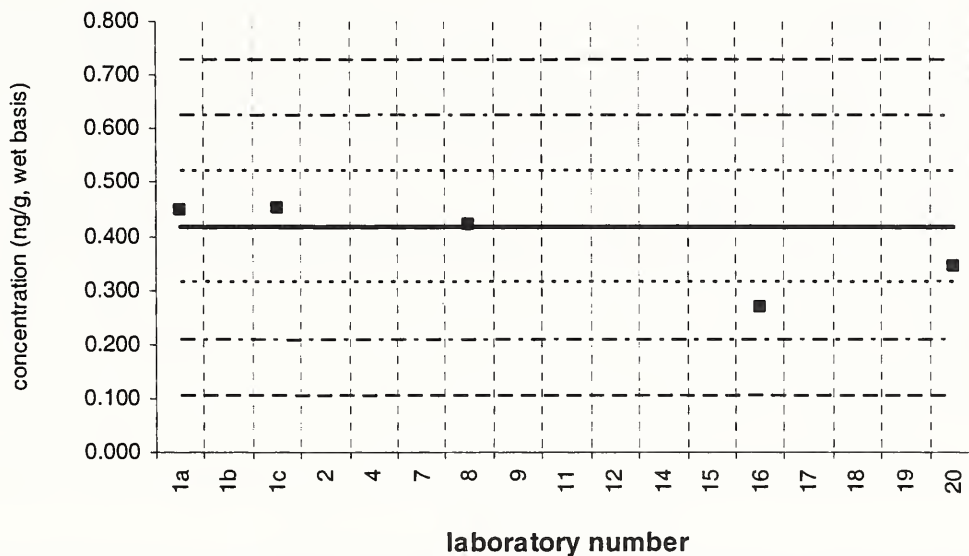
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

dieldrin

Tissue XI (QA03TIS11)

Assigned value = 0.417 ng/g $s = 0.050$ ng/g 95% CL = 0.080 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 7



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

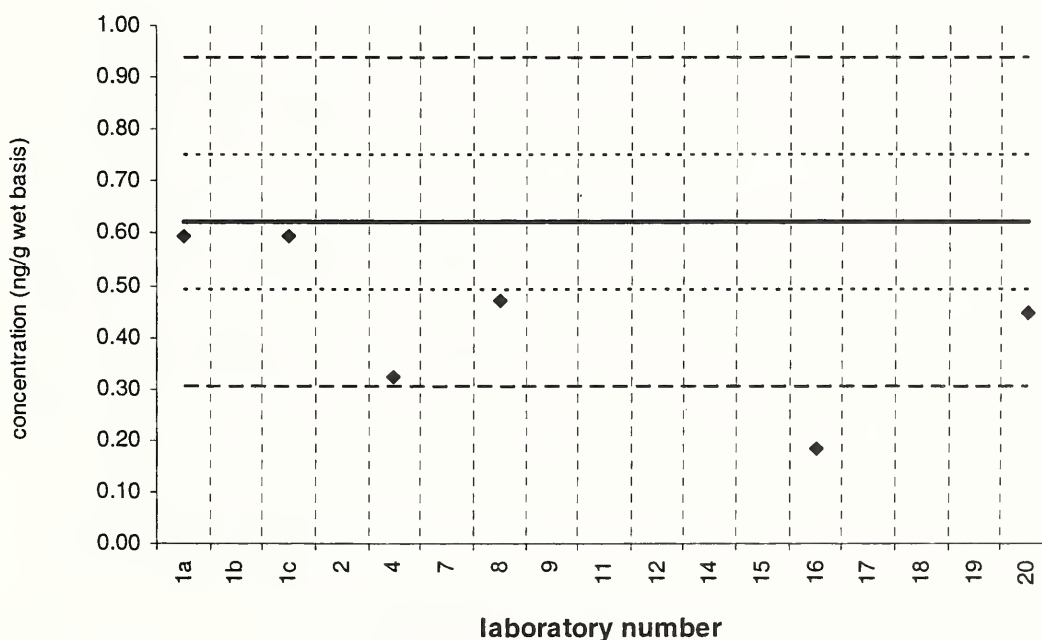
Lab 9 –
5.33; Lab
11 – 8.92

dieldrin

SRM 1974b

Reference Value = 0.620 ± 0.130 ng/g (wet basis)

Reported Results: 12 Quantitative Results: 9



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

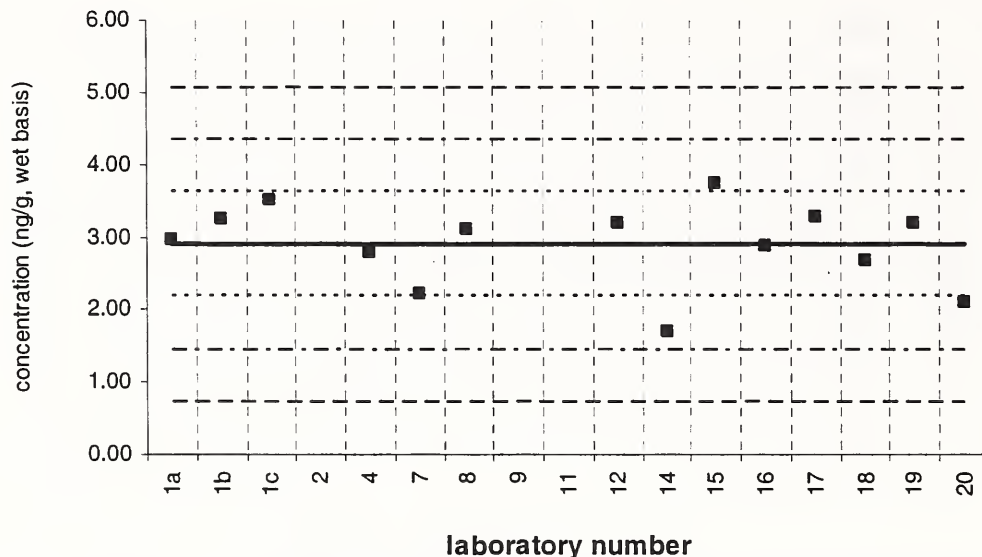
Lab 9 –
6.25; Lab
11 – 8.37;
Lab 18 –
16.7

Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

4,4'-DDE

Tissue XI (QA03TIS11)

Assigned value = 2.89 ng/g $s = 0.56$ ng/g 95% CL = 0.32 ng/g (wet basis)
Reported Results: 16 Quantitative Results: 16



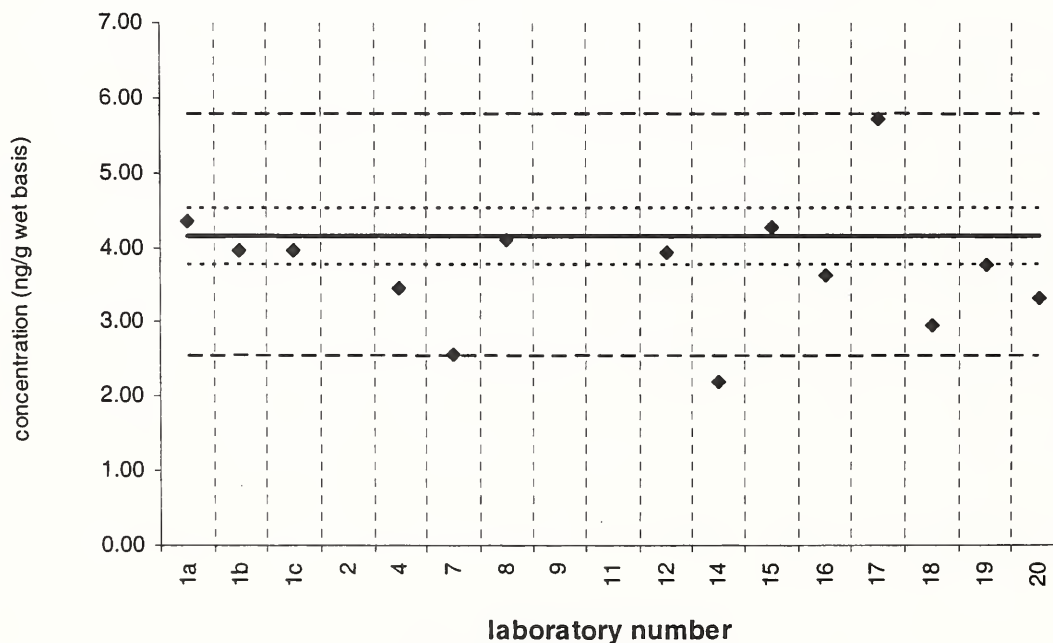
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

Lab 9 –
51.6; Lab
11 – 39.7

4,4'-DDE

SRM 1974b

Certified Value = 4.15 ± 0.38 ng/g (wet basis)
Reported Results: 16 Quantitative Results: 16



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

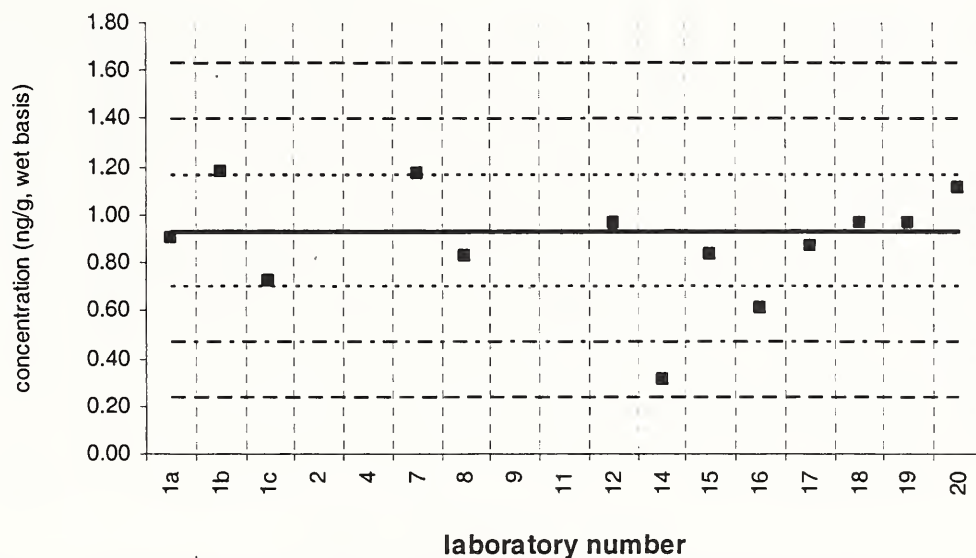
Lab 9 –
56.1; Lab
11 – 41.6

Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

2,4'-DDD**Tissue XI (QA03TIS11)**

Assigned value = 0.928 ng/g $s = 0.172$ ng/g 95% CL = 0.109 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 14



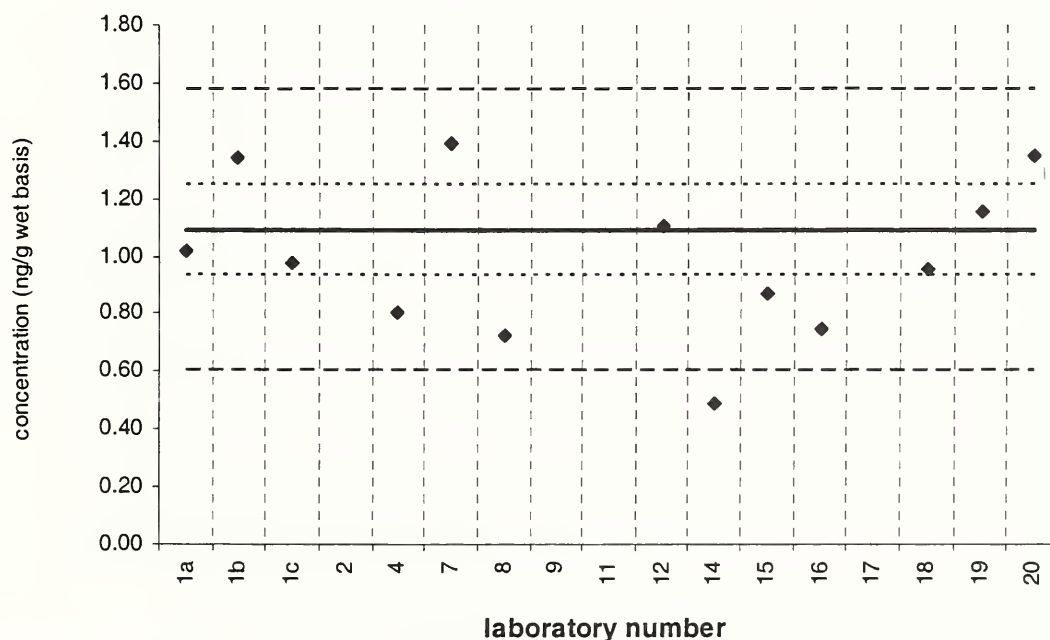
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

Lab 11 –
13.6

2,4'-DDD**SRM 1974b**

Reference Value = 1.09 ± 0.16 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 14



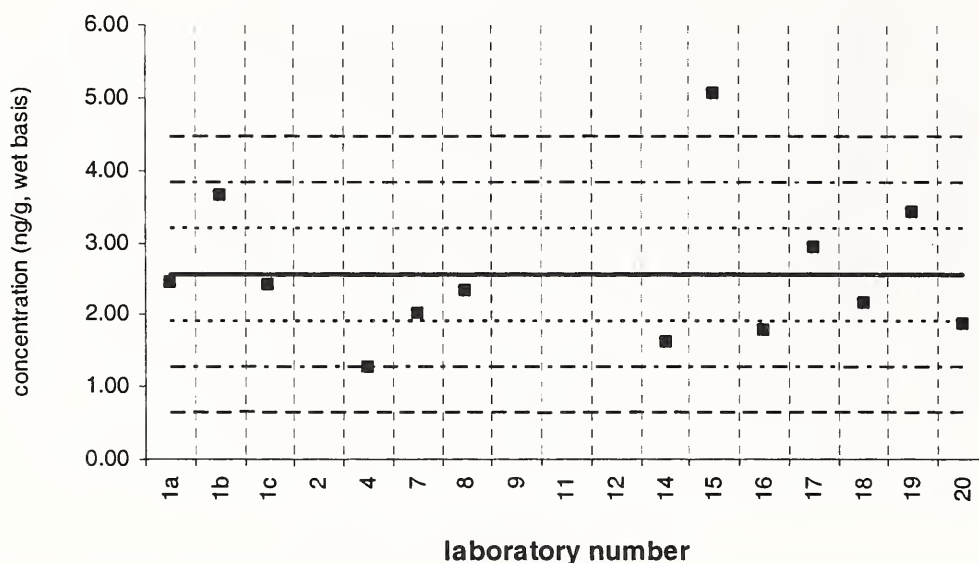
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 11 –
12.6

4,4'-DDD

Tissue XI (QA03TIS11)

Assigned value = 2.54 ng/g $s = 0.98$ ng/g 95% CL = 0.66 ng/g (wet basis)
 Reported Results: 16 Quantitative Results: 15



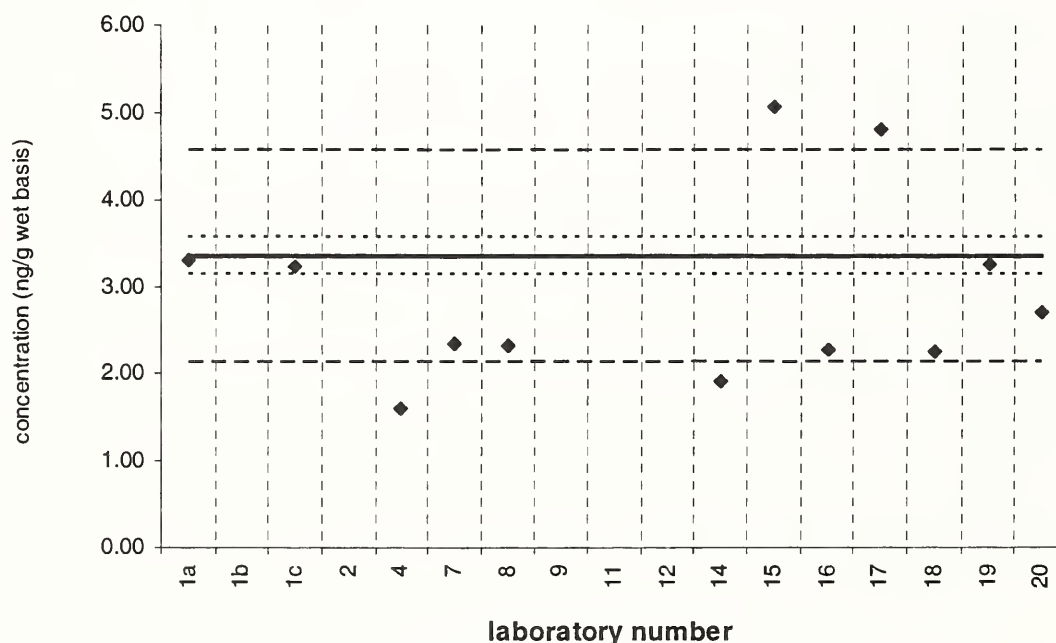
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

Lab 9 –
 30.1; Lab
 11 – 30.6

4,4'-DDD

SRM 1974b

Certified Value = 3.34 ± 0.22 ng/g (wet basis)
 Reported Results: 16 Quantitative Results: 14



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
 27.5; Lab
 11 – 31.5

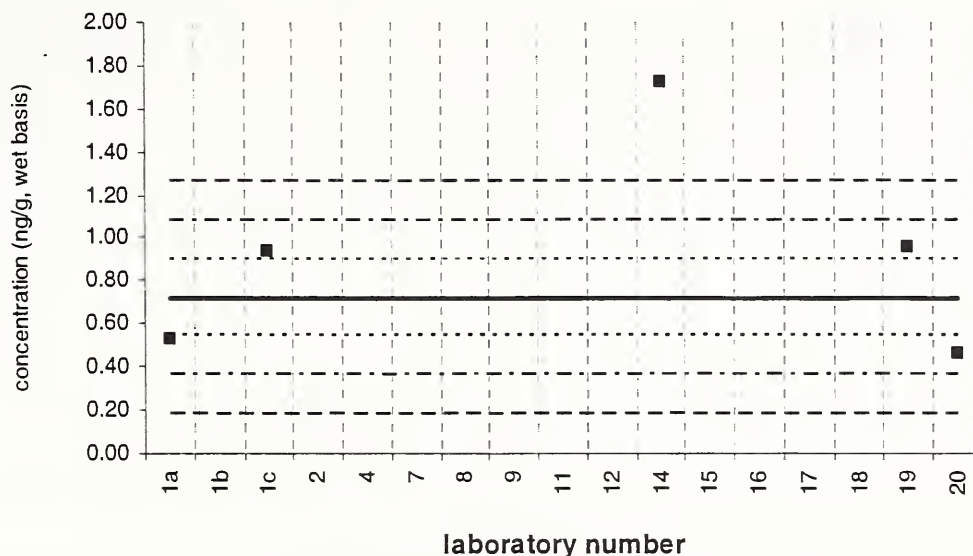
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

2,4'-DDT

Tissue XI (QA03TIS11)

Assigned value = 0.722 ng/g $s = 0.262$ ng/g 95% CL = 0.417 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 6



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

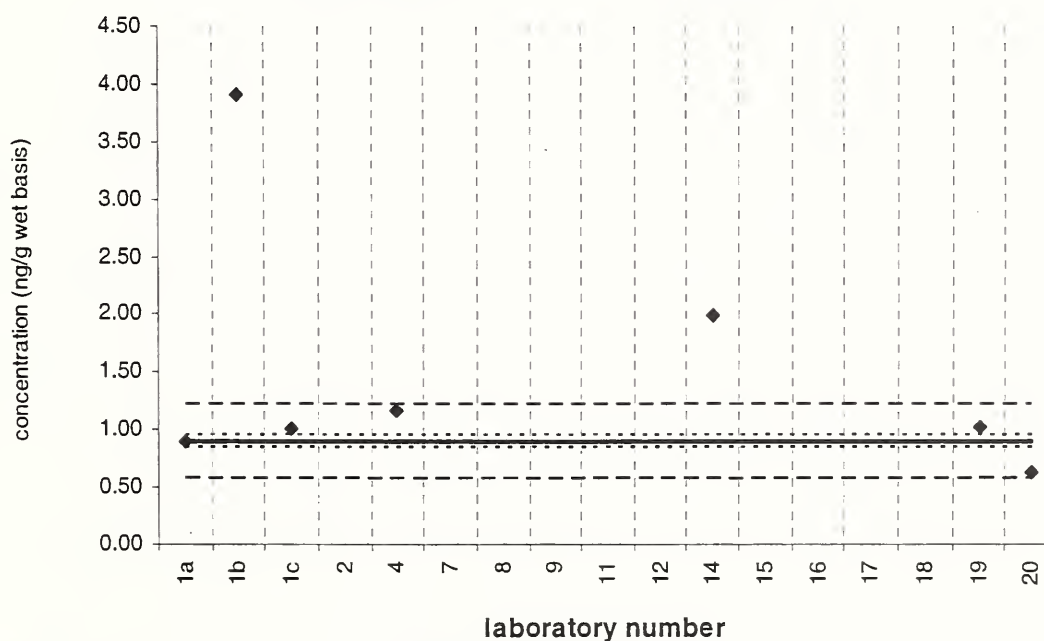
Lab 11 –
8.92

2,4'-DDT

SRM 1974b

Reference Value = 0.894 ± 0.057 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 8



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

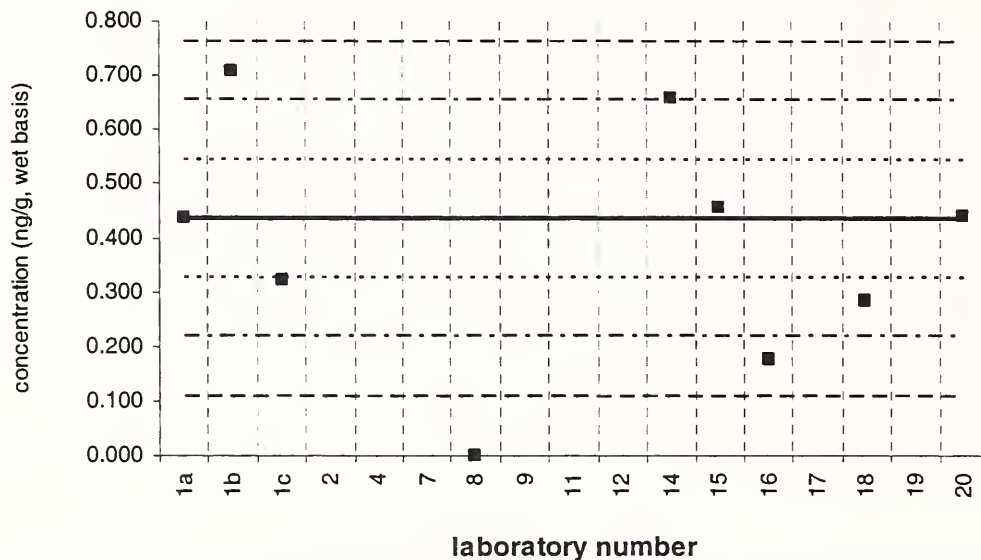
Lab 11 –
6.14

cis-nonachlor

Tissue XI (QA03TIS11)

Assigned value = 0.435 ng/g $s = 0.181$ ng/g 95% CL = 0.151 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 10



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

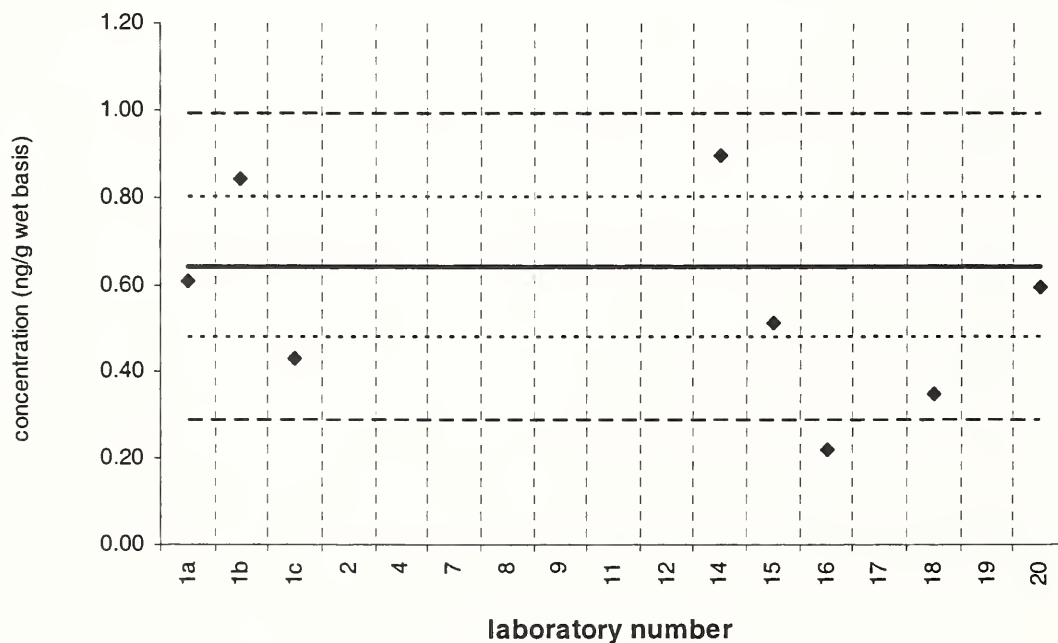
Lab 9 –
8.27; Lab
11 – 8.93

cis-nonachlor

SRM 1974b

Reference Value = 0.640 ± 0.160 ng/g (wet basis)

Reported Results: 12 Quantitative Results: 10



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
5.79; Lab
11 – 9.20

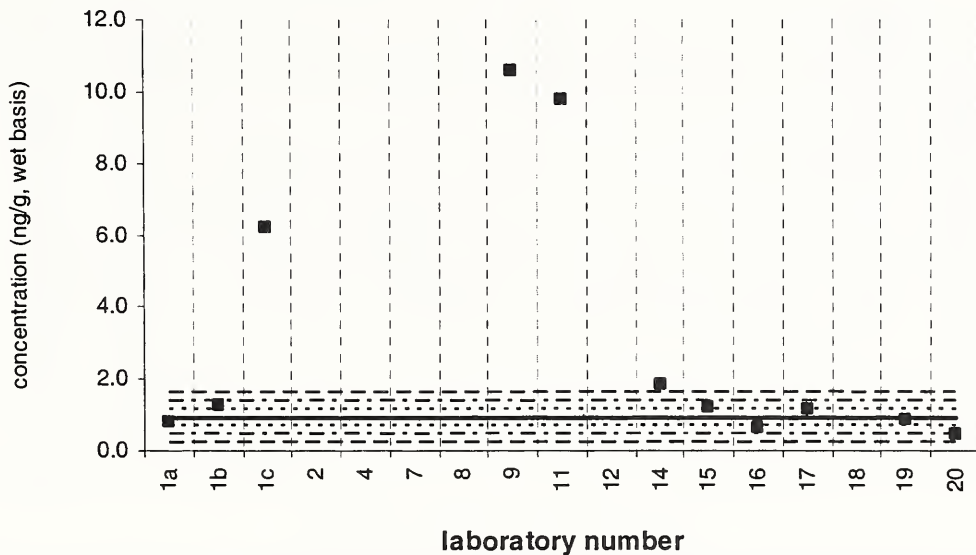
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

4,4'-DDT

Tissue XI (QA03TIS11)

Assigned value = 0.903 ng/g $s = 0.312$ ng/g 95% CL = 0.289 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 11



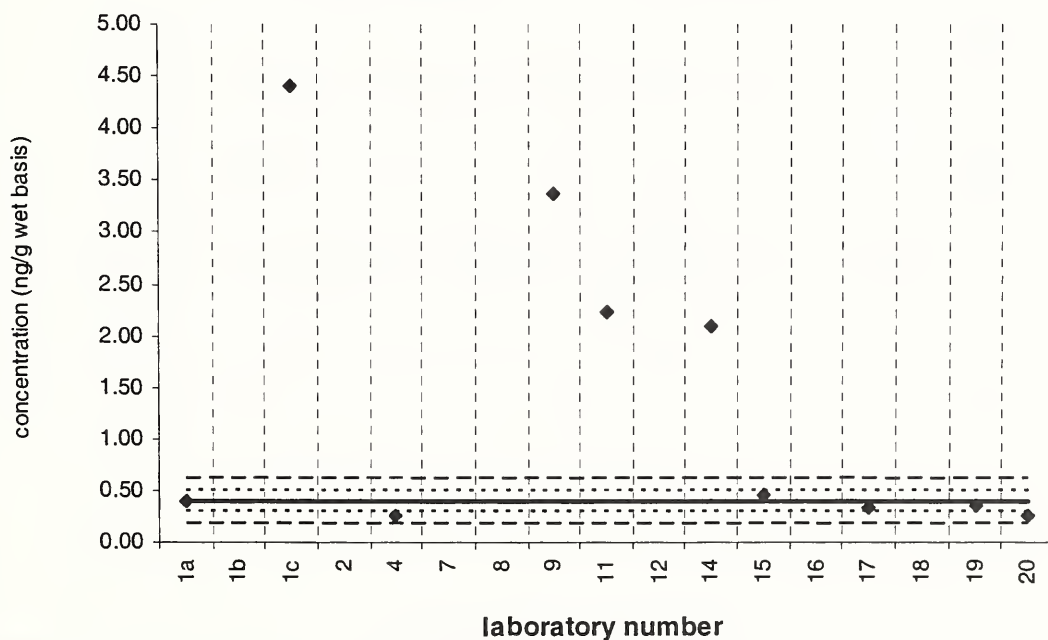
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

4,4'-DDT

SRM 1974b

Reference Value = 0.396 ± 0.096 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 10



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

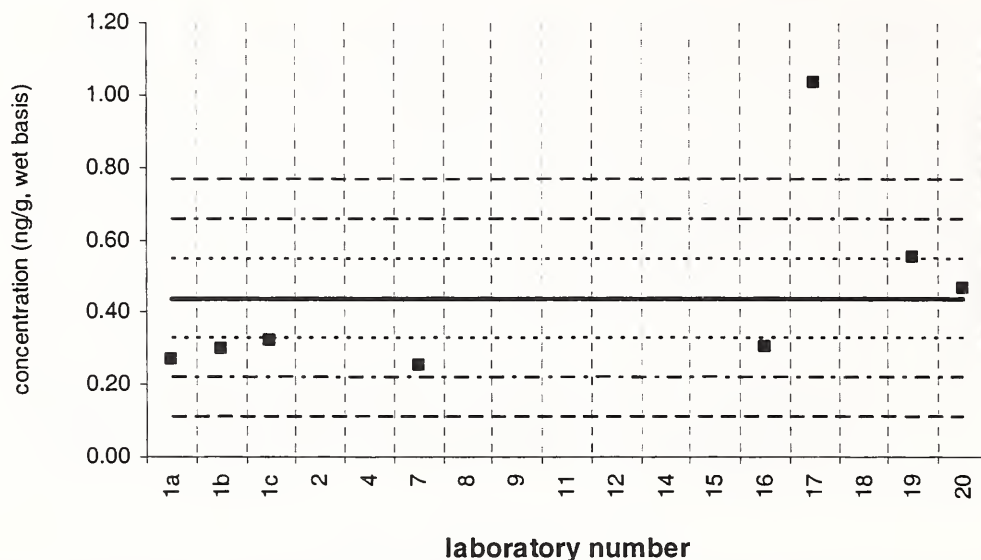
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 8

Tissue XI (QA03TIS11)

Assigned value = 0.437 ng/g $s = 0.262$ ng/g 95% CL = 0.219 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 10



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

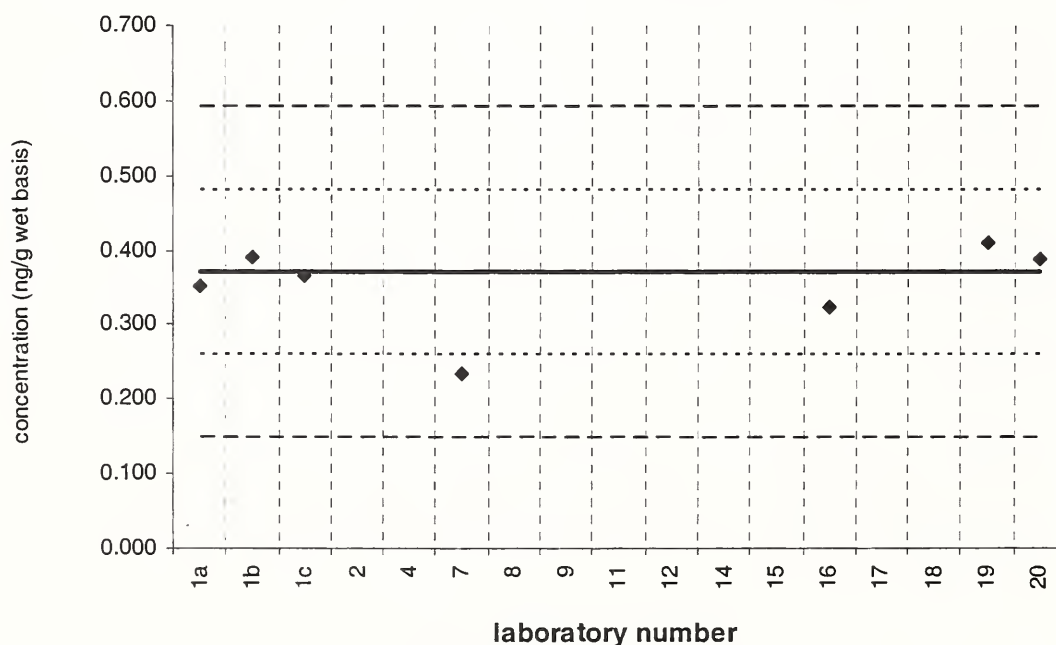
Lab 9 –
3.37; Lab
11 – 29.1

PCB 8

SRM 1974b

Reference Value = 0.370 ± 0.110 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 9



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
4.11; Lab
11 – 8.60

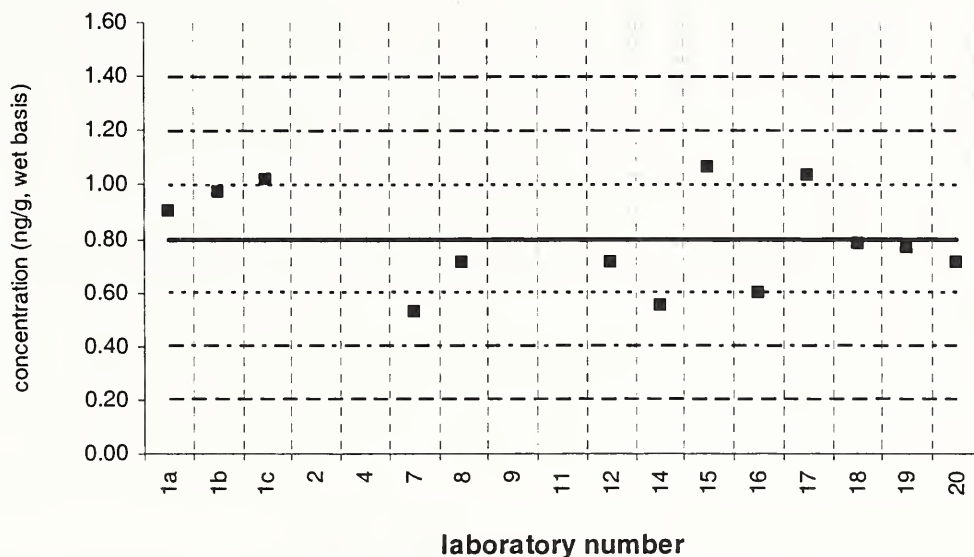
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 18

Tissue XI (QA03TIS11)

Assigned value = 0.796 ng/g $s = 0.186$ ng/g 95% CL = 0.112 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 15



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

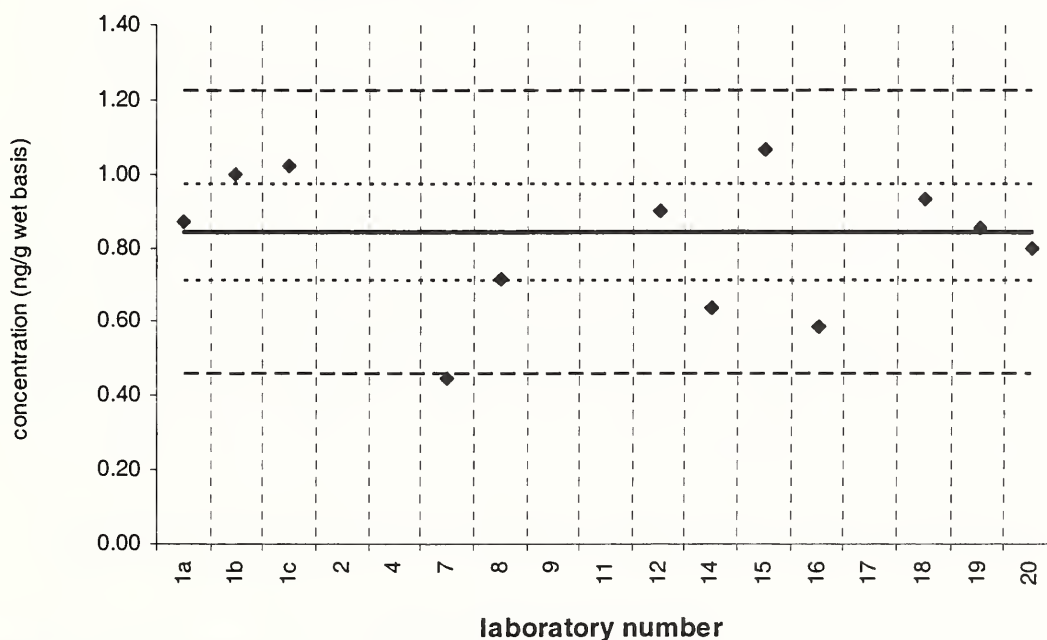
Lab 9 –
8.41; Lab
11 – 13.0

PCB 18

SRM 1974b

Certified Value = 0.840 ± 0.130 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 14



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
9.55; Lab
11 – 11.7

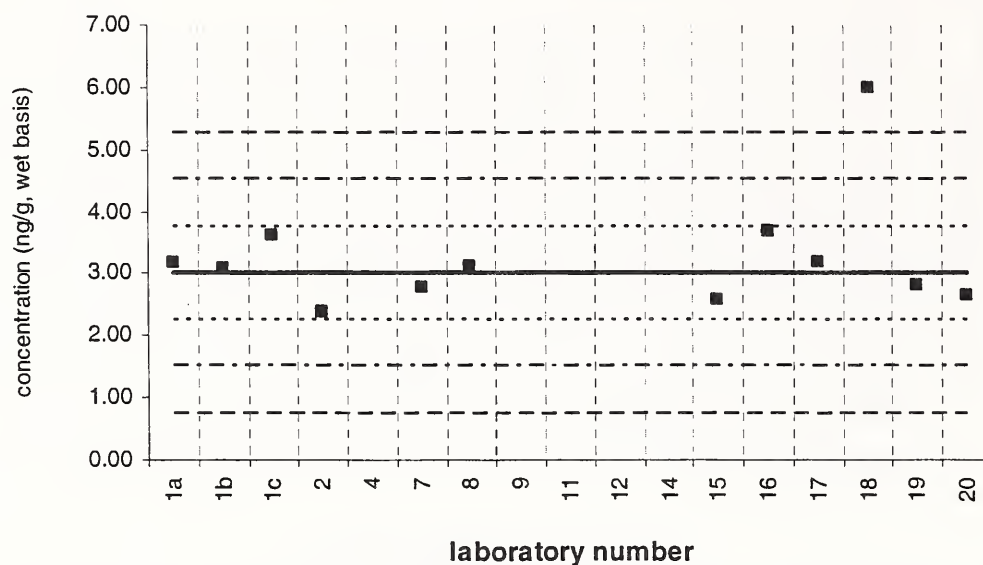
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 28

Tissue XI (QA03TIS11)

Assigned value = 3.00 ng/g $s = 0.42$ ng/g 95% CL = 0.28 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 14



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

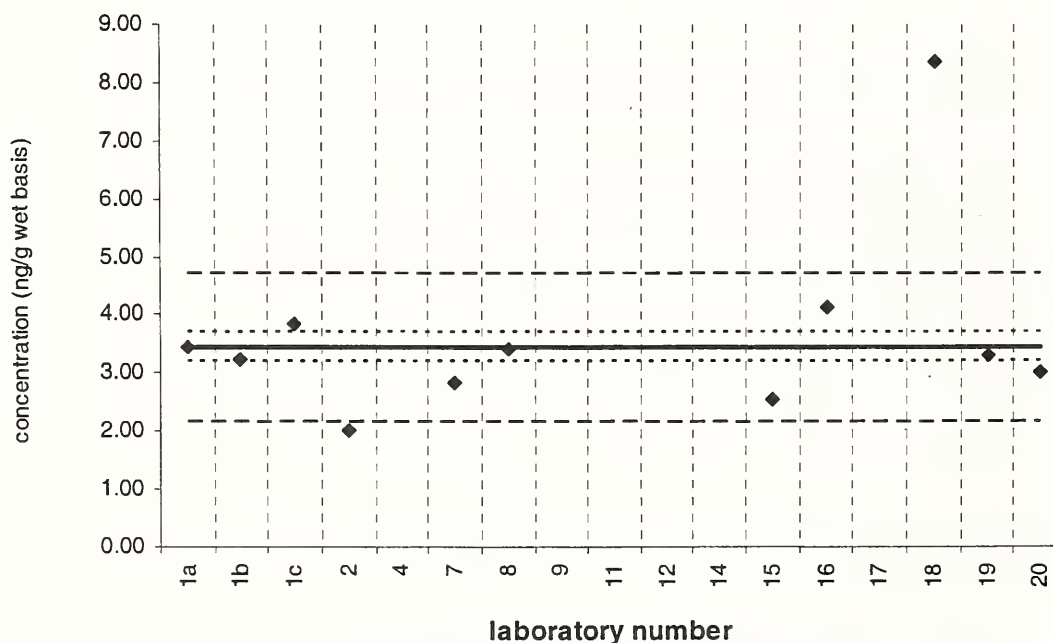
Lab 9 –
29.7; Lab
11 – 44.3

PCB 28

SRM 1974b

Certified Value = 3.43 ± 0.25 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 13



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
27.2; Lab
11 – 41.5

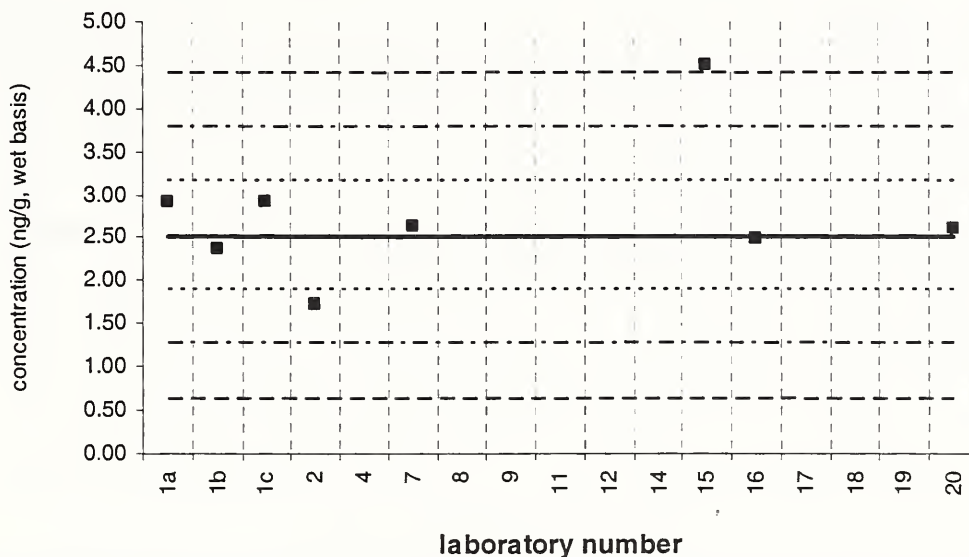
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 31

Tissue XI (QA03TIS11)

Assigned value = 2.52 ng/g $s = 0.41$ ng/g 95% CL = 0.38 ng/g (wet basis)

Reported Results: 11 Quantitative Results: 10



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

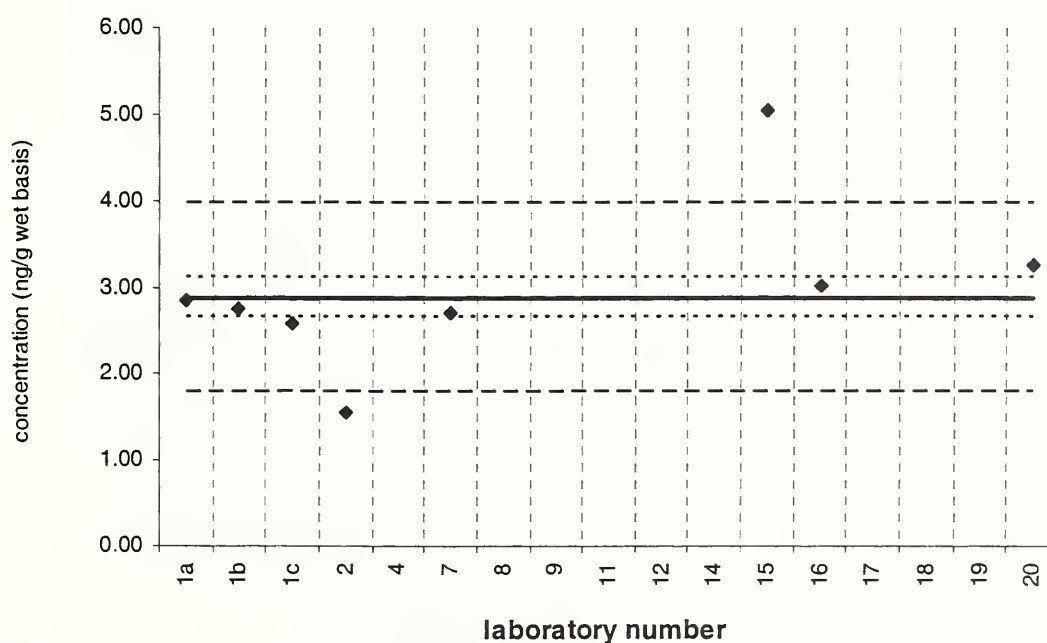
Lab 9 –
15.3; Lab
11 – 17.5

PCB 31

SRM 1974b

Certified Value = 2.88 ± 0.23 ng/g (wet basis)

Reported Results: 11 Quantitative Results: 10



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
20.0; Lab
11 – 18.7

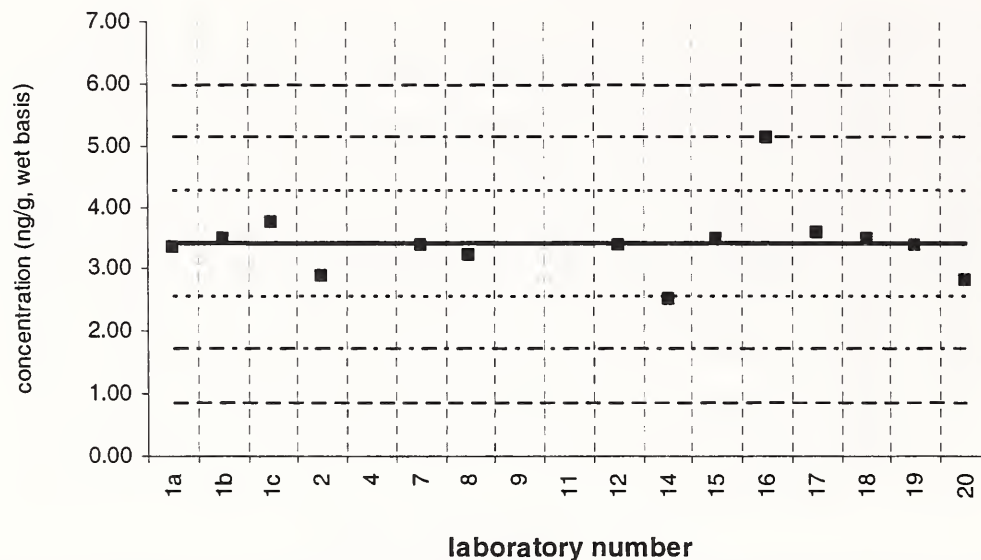
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 44

Tissue XI (QA03TIS11)

Assigned value = 3.41 ng/g $s = 1.96$ ng/g 95% CL = 1.18 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 16



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

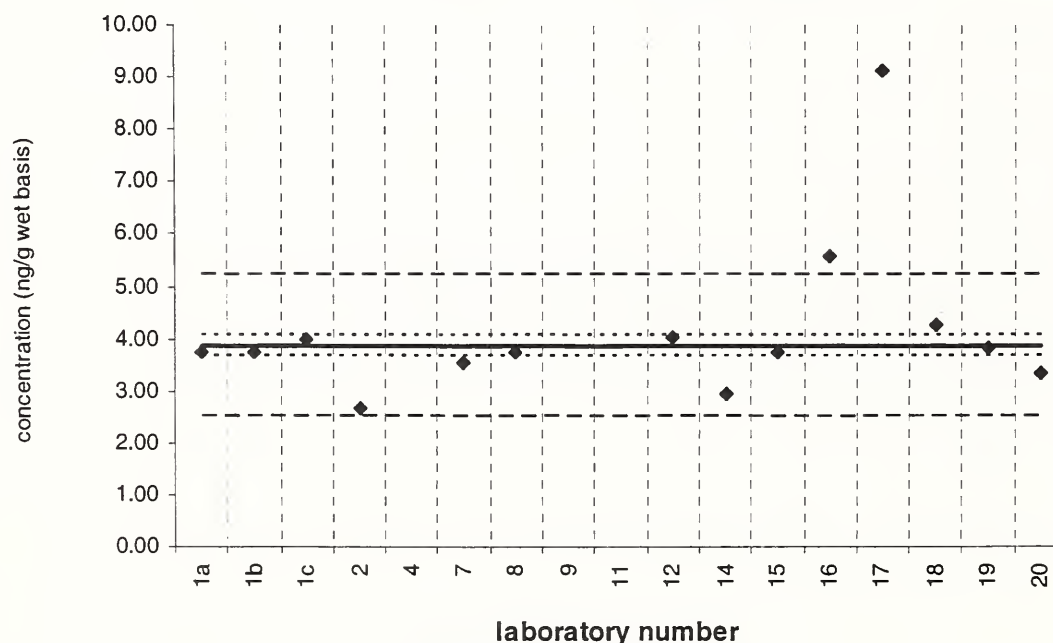
Lab 9 –
33.9; Lab
11 – 41.8

PCB 44

SRM 1974b

Certified Value = 3.85 ± 0.20 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 16



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
29.2; Lab
11 – 39.0

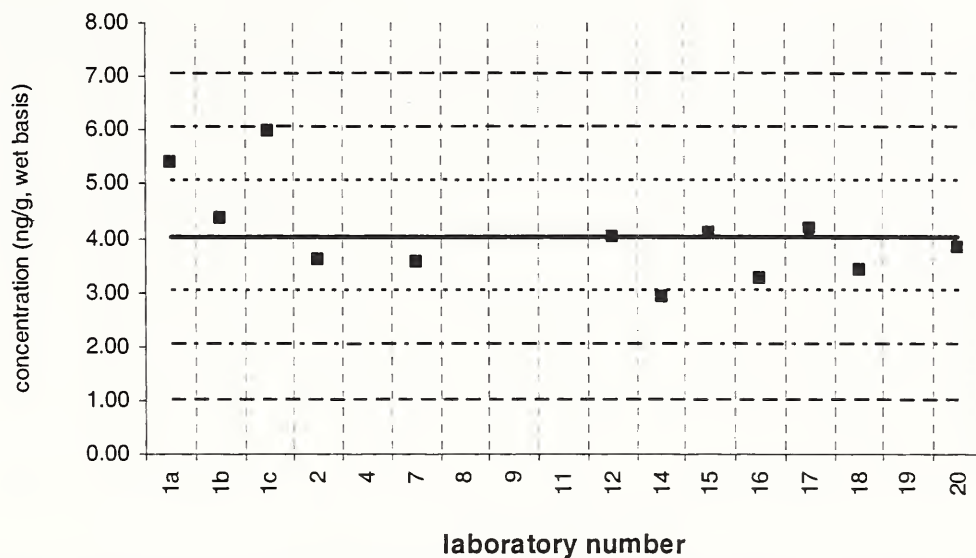
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 49

Tissue XI (QA03TIS11)

Assigned value = 4.04 ng/g $s = 0.92$ ng/g 95% CL = 0.62 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 14



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

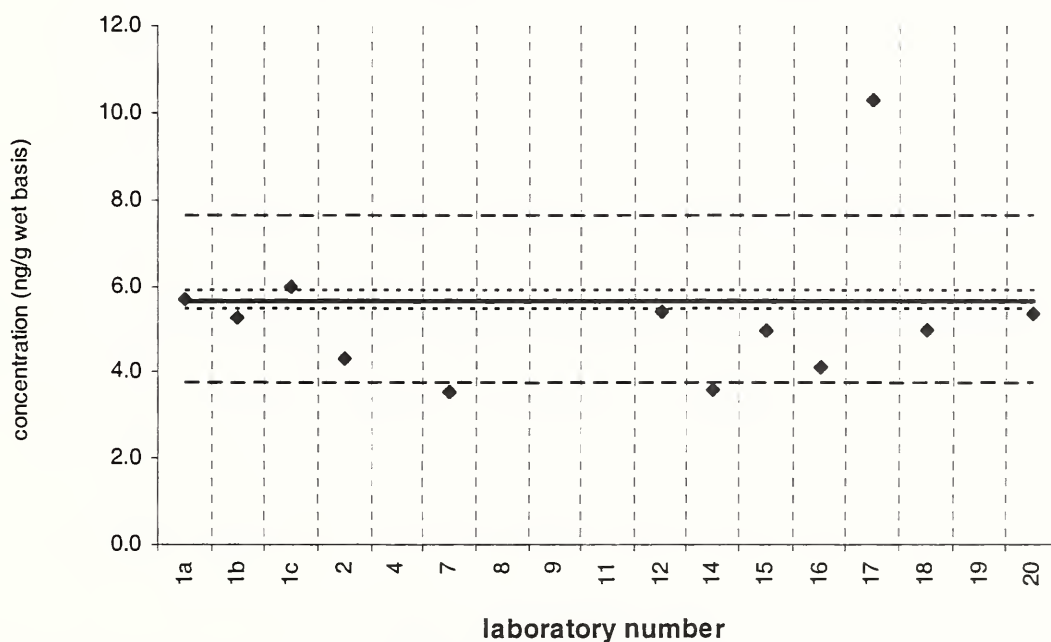
Lab 9 –
18.8; Lab
11 – 64.5

PCB 49

SRM 1974b

Certified Value = 5.66 ± 0.23 ng/g (wet basis)

Reported Results: 14 Quantitative Results: 14



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
20.8; Lab
11 – 71.4

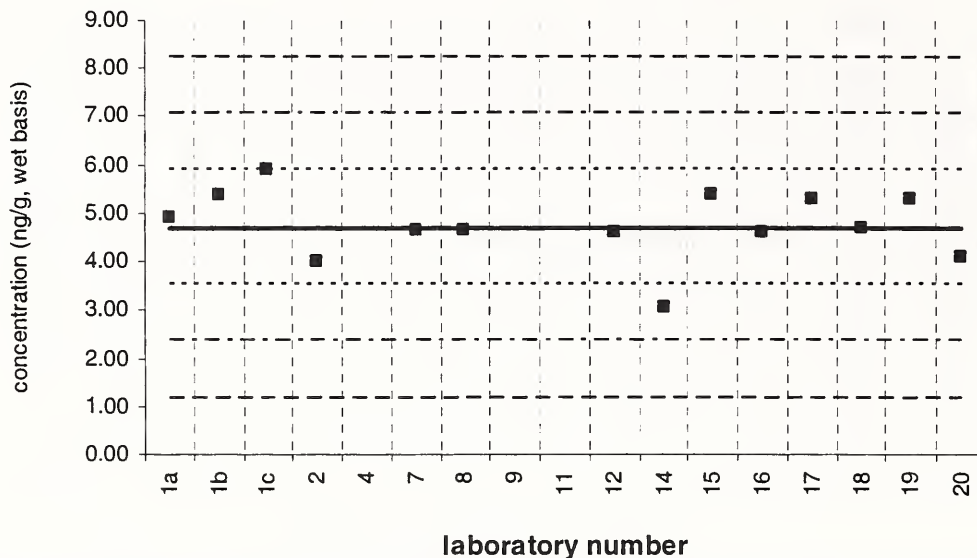
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 52

Tissue XI (QA03TIS11)

Assigned value = 4.71 ng/g $s = 0.73$ ng/g 95% CL = 0.44 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 16



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

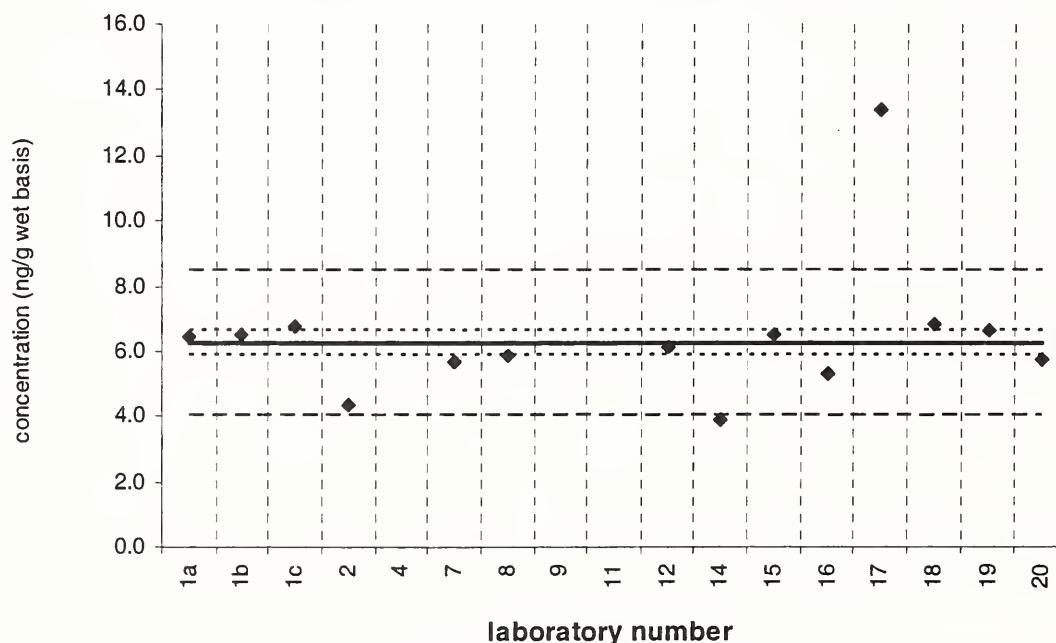
Lab 9 –
35.5; Lab
11 – 69.9

PCB 52

SRM 1974b

Certified Value = 6.26 \pm 0.37 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 16



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
42.3; Lab
11 – 73.7

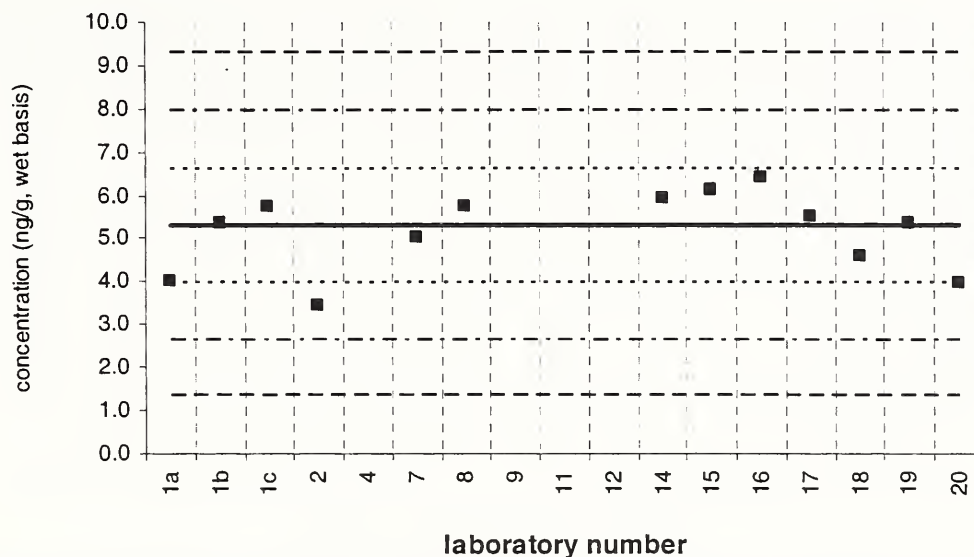
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 66

Tissue XI (QA03TIS11)

Assigned value = 5.29 ng/g $s = 0.82$ ng/g 95% CL = 0.55 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 15



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

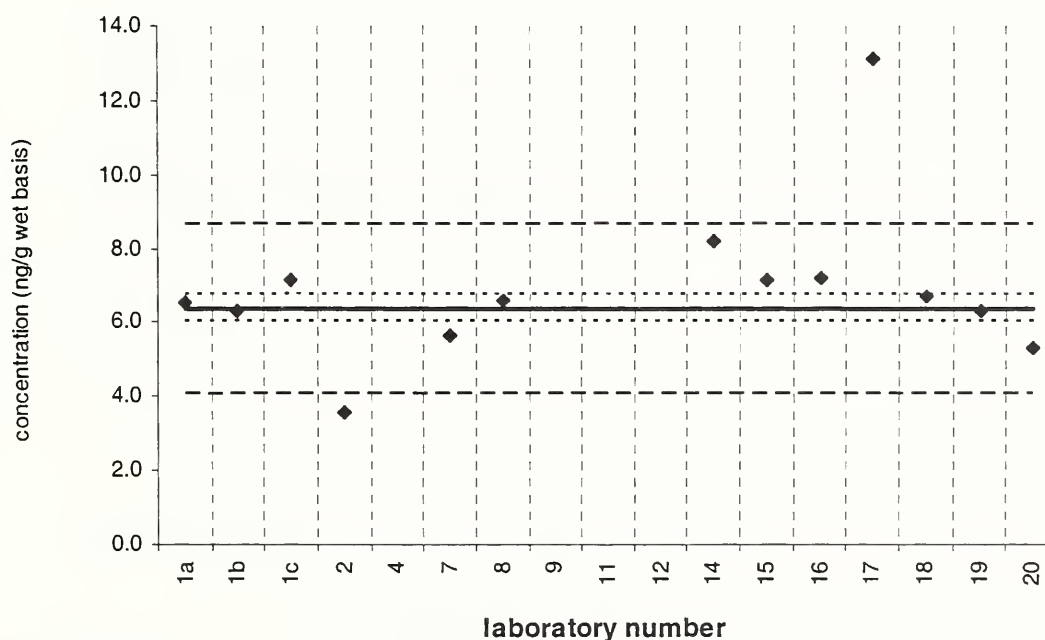
Lab 9 –
65.7; Lab
11 – 61.8

PCB 66

SRM 1974b

Certified Value = 6.37 ± 0.37 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 15



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
68.4; Lab
11 – 64.9

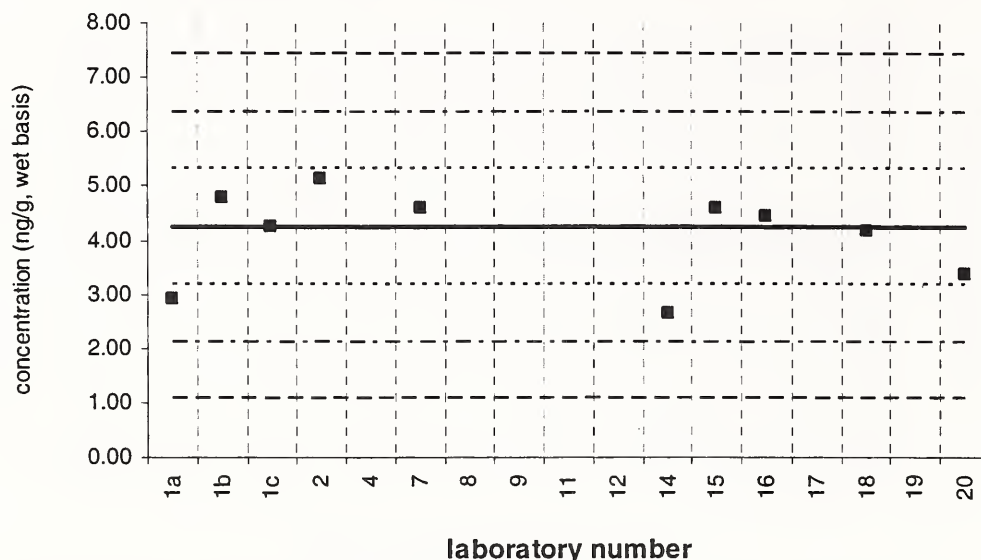
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 95

Tissue XI (QA03TIS11)

Assigned value = 4.24 ng/g $s = 0.70$ ng/g 95% CL = 0.54 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 12



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

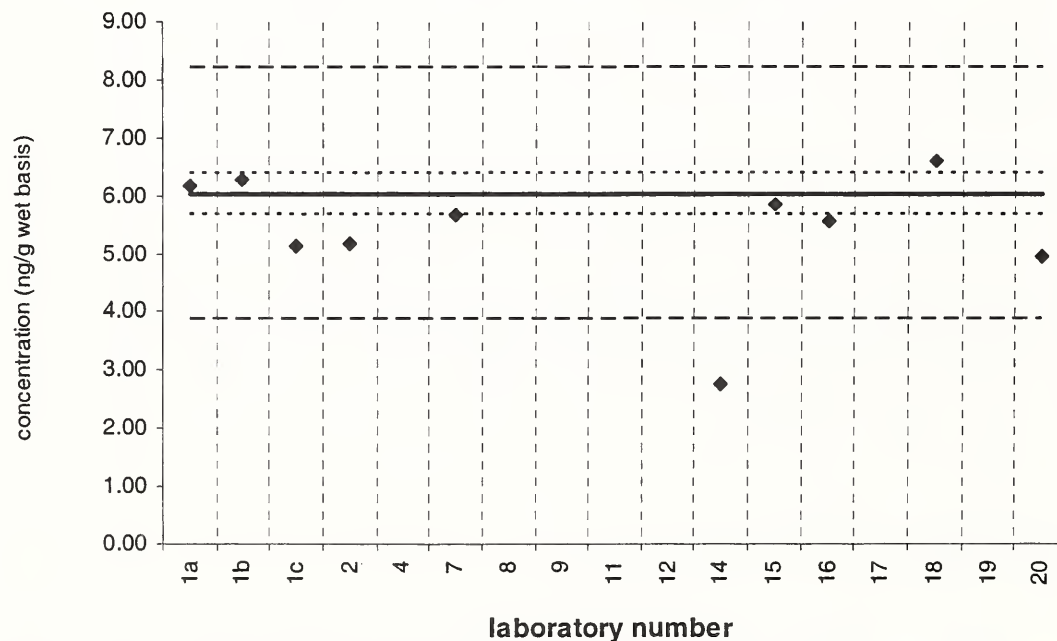
Lab 9 –
39.1; Lab
11 – 62.6

PCB 95

SRM 1974b

Certified Value = 6.04 ± 0.36 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 12



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
44.1; Lab
11 – 67.9

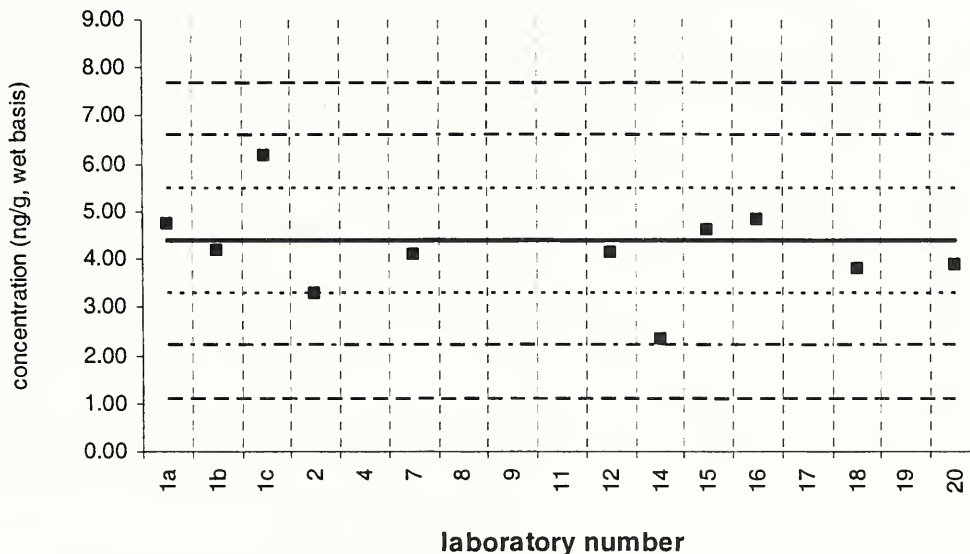
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 99

Tissue XI (QA03TIS11)

Assigned value = 4.39 ng/g $s = 0.83$ ng/g 95% CL = 0.60 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 13



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

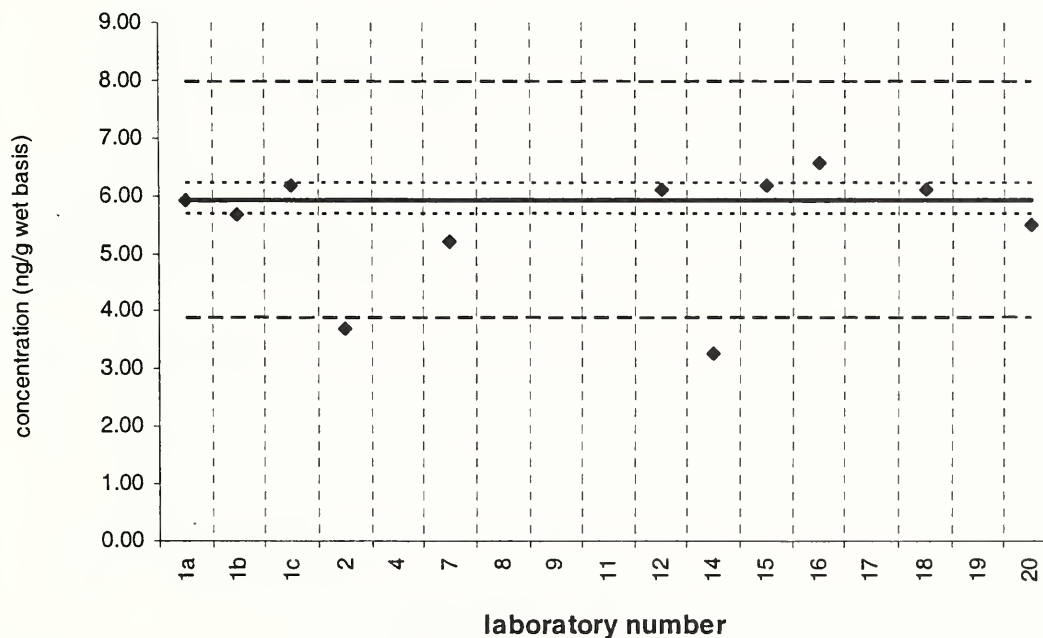
Lab 9 –
27.0; Lab
11 – 63.7

PCB 99

SRM 1974b

Certified Value = 5.92 ± 0.27 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 13



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
36.9; Lab
11 – 71.6

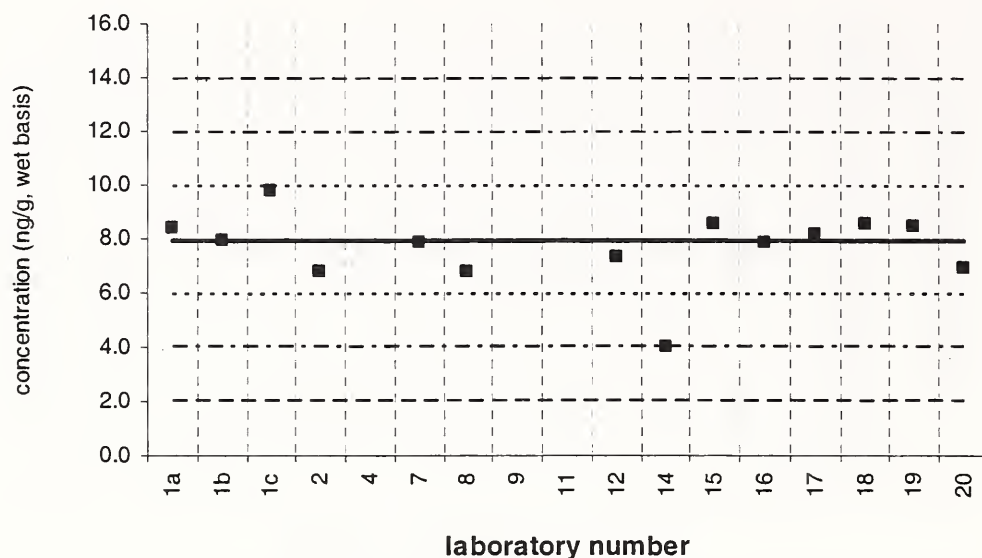
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 101

Tissue XI (QA03TIS11)

Assigned value = 7.95 ng/g $s = 0.86$ ng/g 95% CL = 0.52 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 16



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

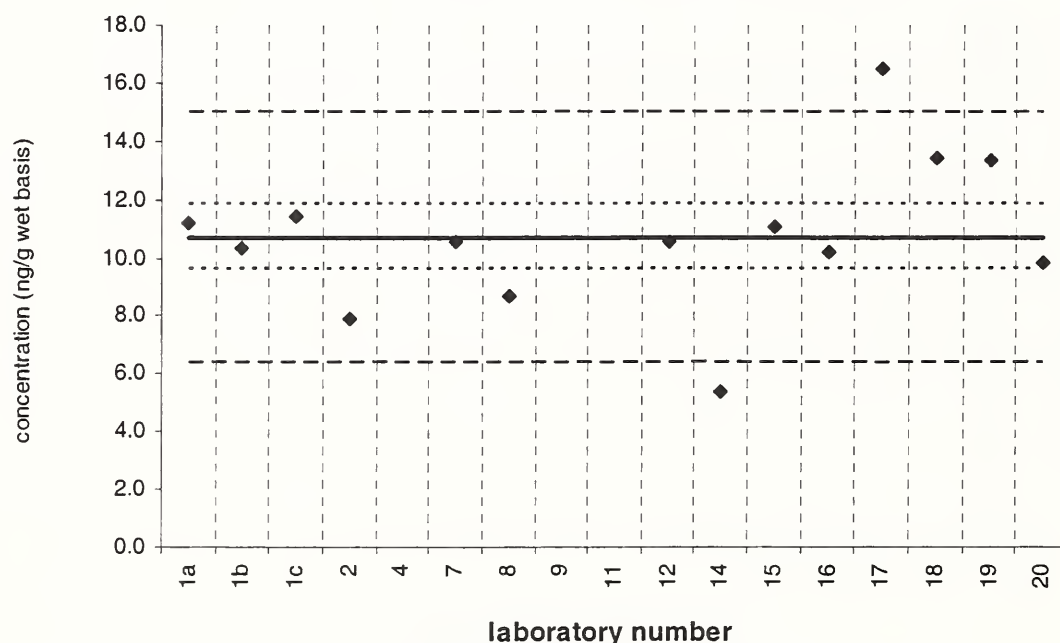
Lab 9 –
70.6; Lab
11 – 109

PCB 101

SRM 1974b

Certified Value = 10.70 ± 1.10 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 16



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
84.2; Lab
11 – 114

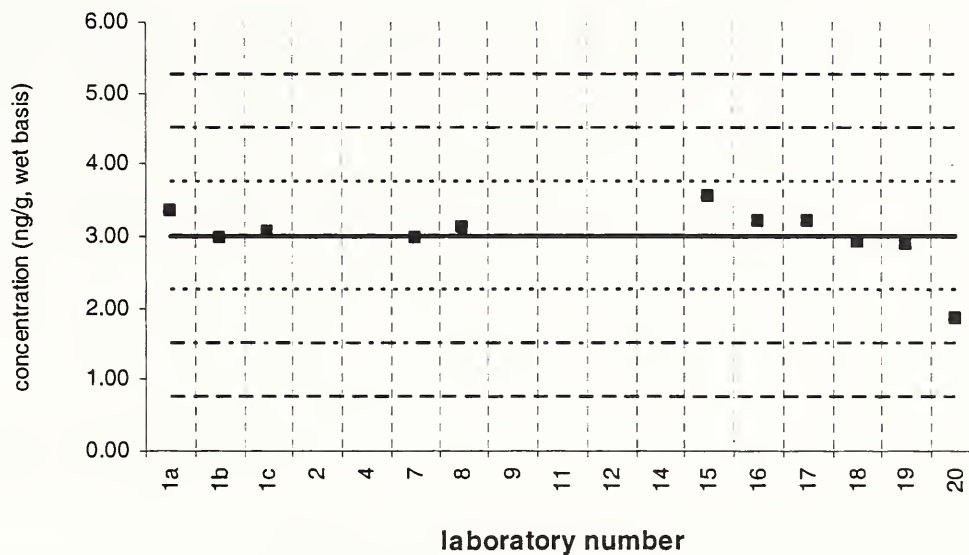
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 105

Tissue XI (QA03TIS11)

Assigned value = 3.00 ng/g $s = 0.43$ ng/g 95% CL = 0.29 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 13



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

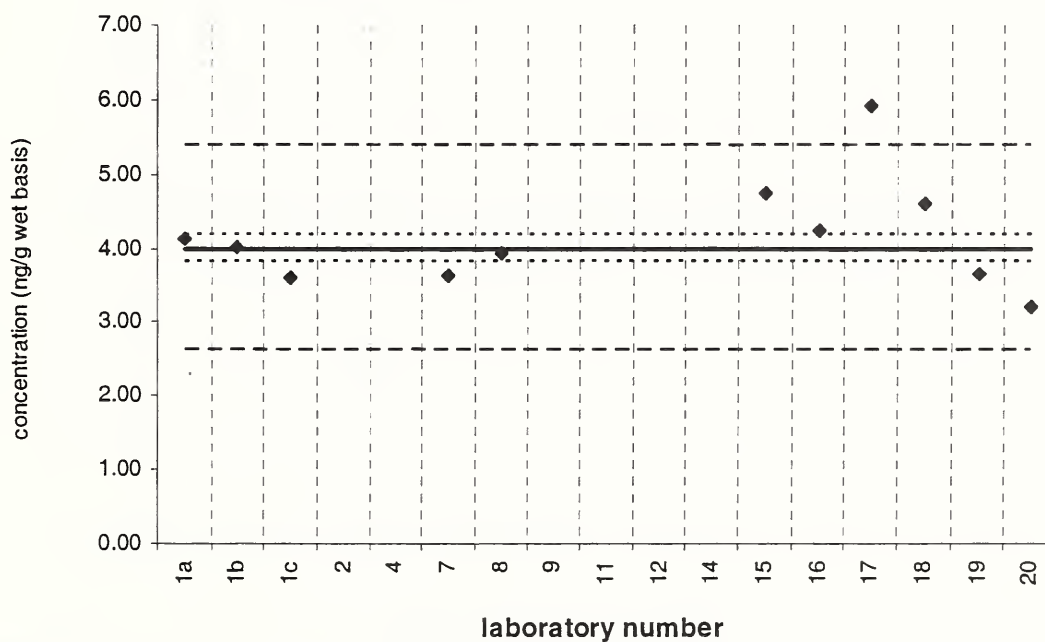
Lab 9 –
30.3; Lab
11 – 41.5

PCB 105

SRM 1974b

Certified Value = 4.00 ± 0.18 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 13



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

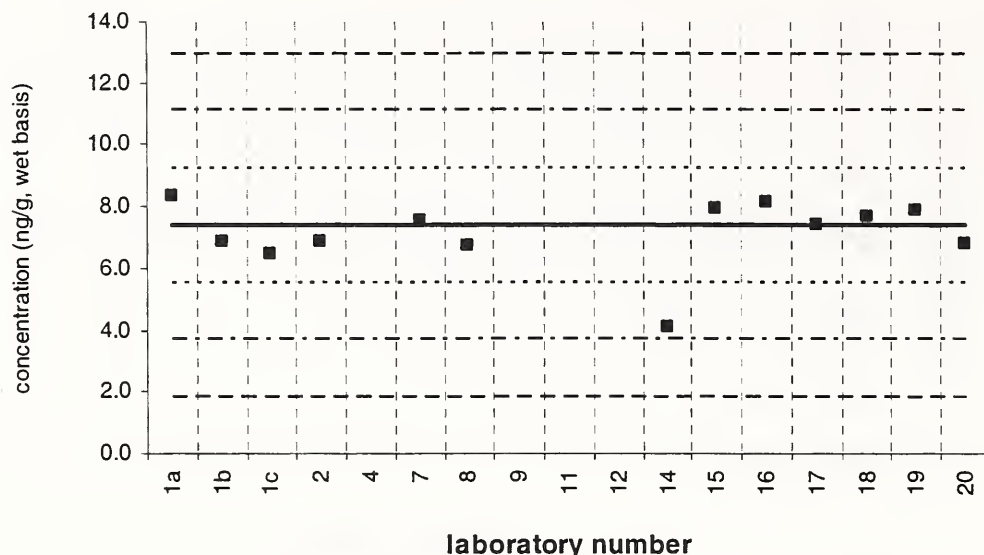
Lab 9 –
32.8; Lab
11 – 44.3

Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 118

Tissue XI (QA03TIS11)

Assigned value = 7.38 ng/g $s = 0.63$ ng/g 95% CL = 0.40 ng/g (wet basis)
 Reported Results: 16 Quantitative Results: 15



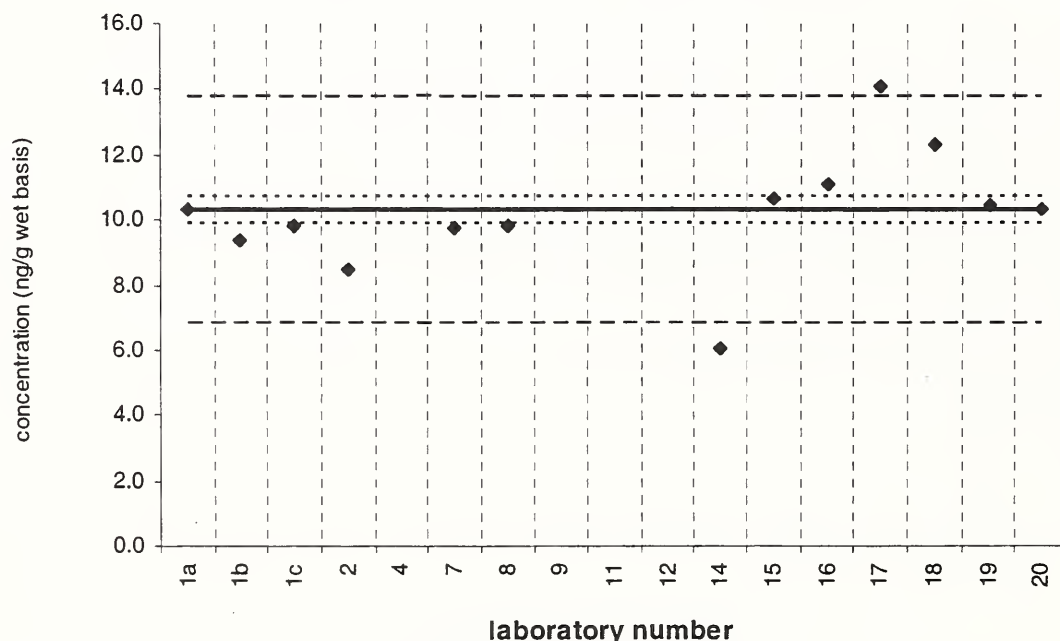
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

Lab 9 –
67.1; Lab
11 – 104

PCB 118

SRM 1974b

Certified Value = 10.3 ± 0.4 ng/g (wet basis)
 Reported Results: 16 Quantitative Results: 15



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

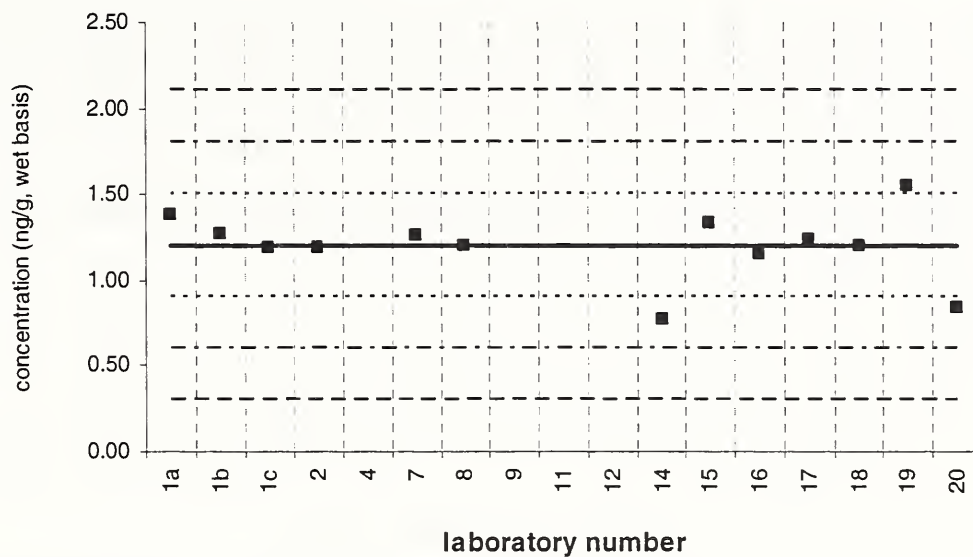
Lab 9 –
83.9; Lab
11 – 122

Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 128**Tissue XI (QA03TIS11)**

Assigned value = 1.20 ng/g $s = 0.20$ ng/g 95% CL = 0.12 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 15



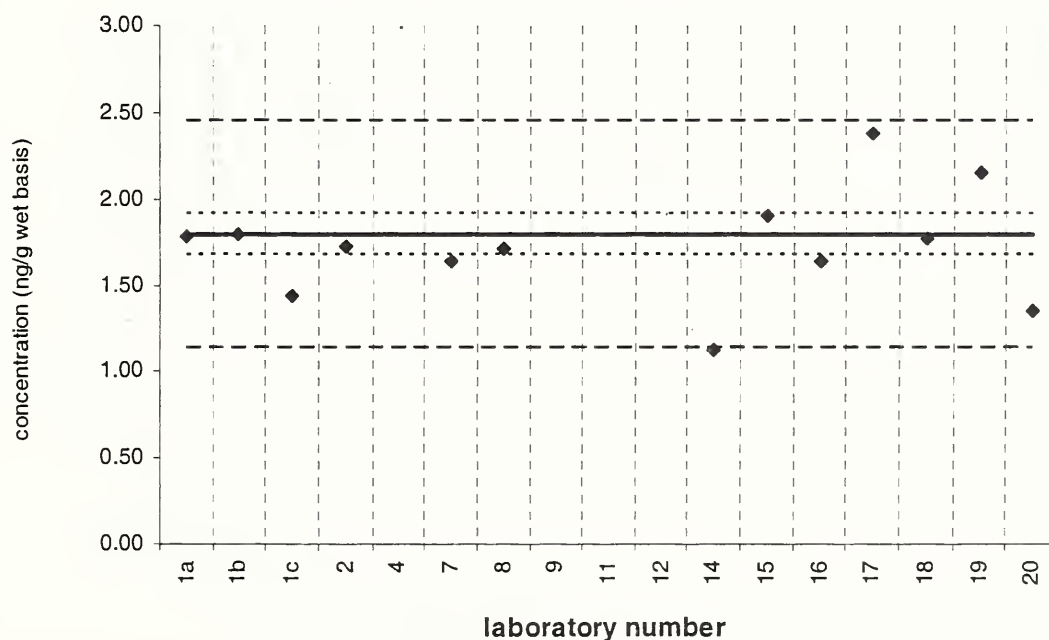
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

Lab 9 –
14.1; Lab
11 – 17.5

PCB 128**SRM 1974b**

Certified Value = 1.79 ± 0.12 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 15



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
18.0; Lab
11 – 21.0

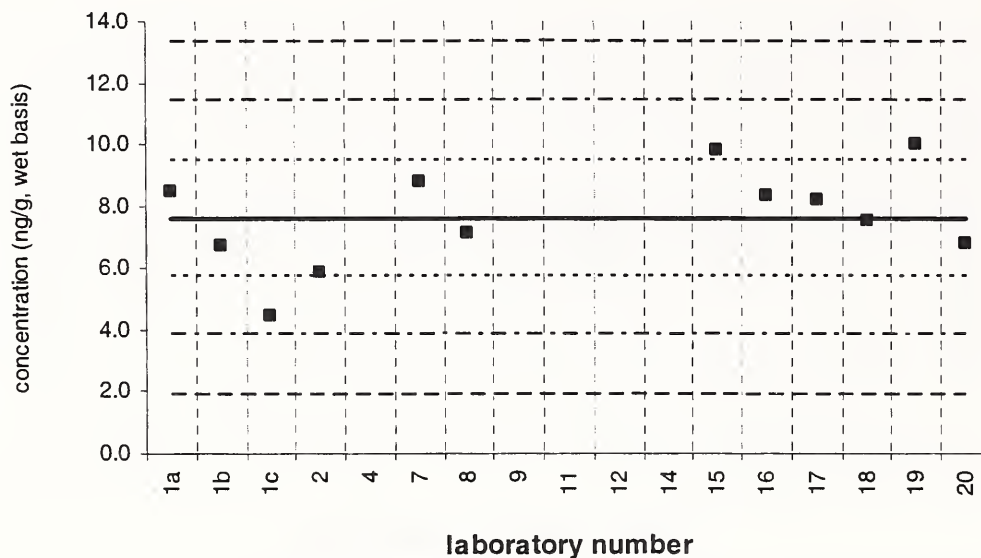
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 138

Tissue XI (QA03TIS11)

Assigned value = 7.62 ng/g $s = 1.69$ ng/g 95% CL = 1.13 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 14



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

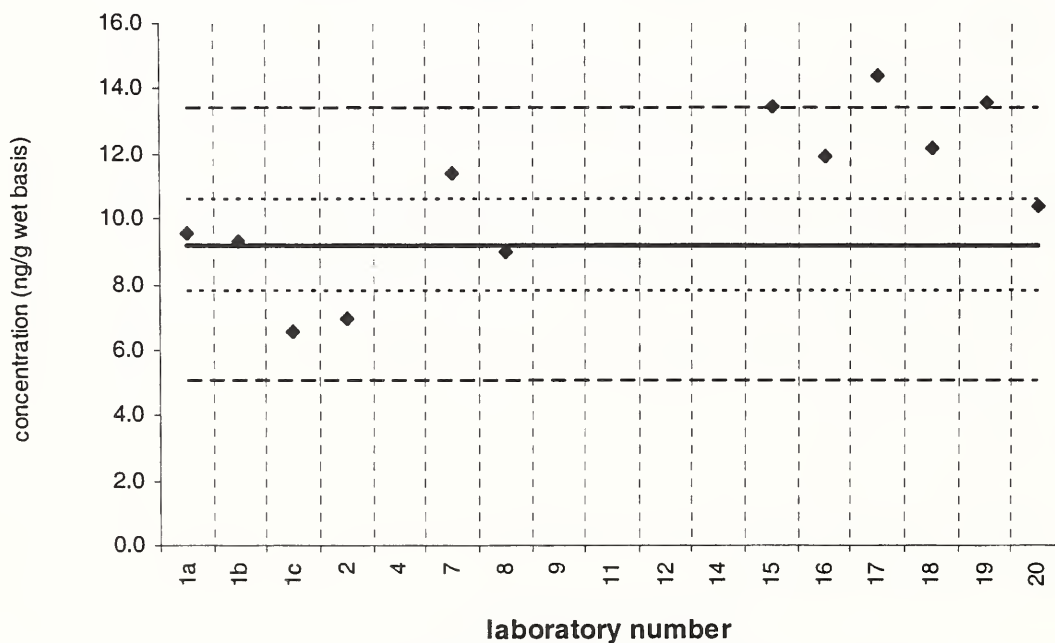
Lab 9 –
69.8; Lab
11 – 109

PCB 138

SRM 1974b

Certified Value = 9.20 ± 1.40 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 14



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
87.6; Lab
11 – 127

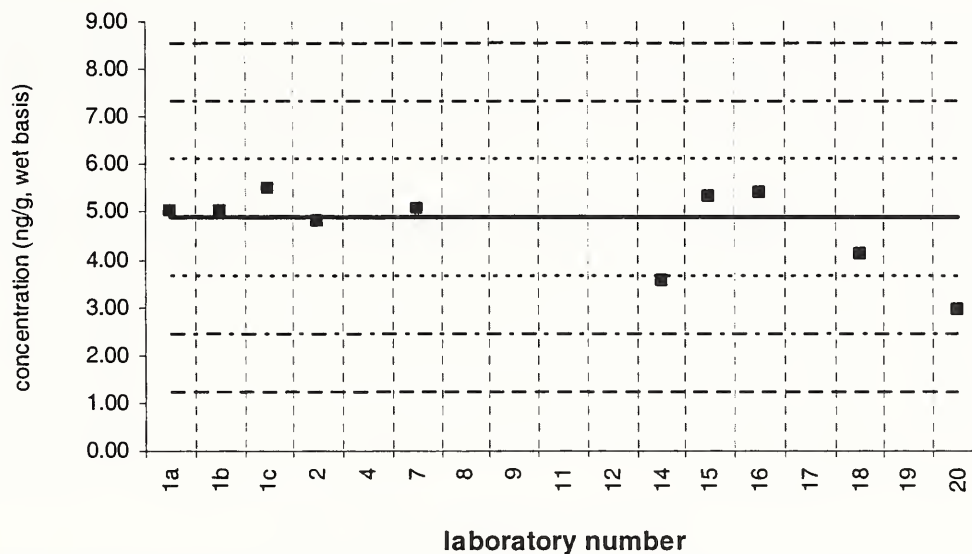
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 149

Tissue XI (QA03TIS11)

Assigned value = 4.87 ng/g $s = 0.64$ ng/g 95% CL = 0.49 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 12



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

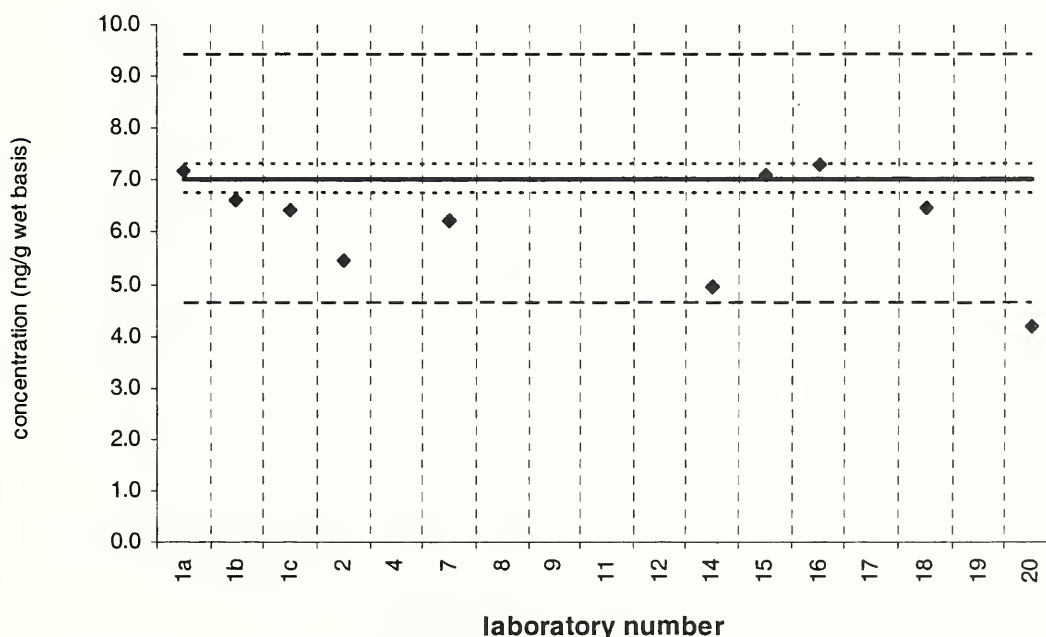
Lab 9 –
39.5; Lab
11 – 67.3

PCB 149

SRM 1974b

Certified Value = 7.01 ± 0.28 ng/g (wet basis)

Reported Results: 13 Quantitative Results: 12



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
46.9; Lab
11 – 71.0

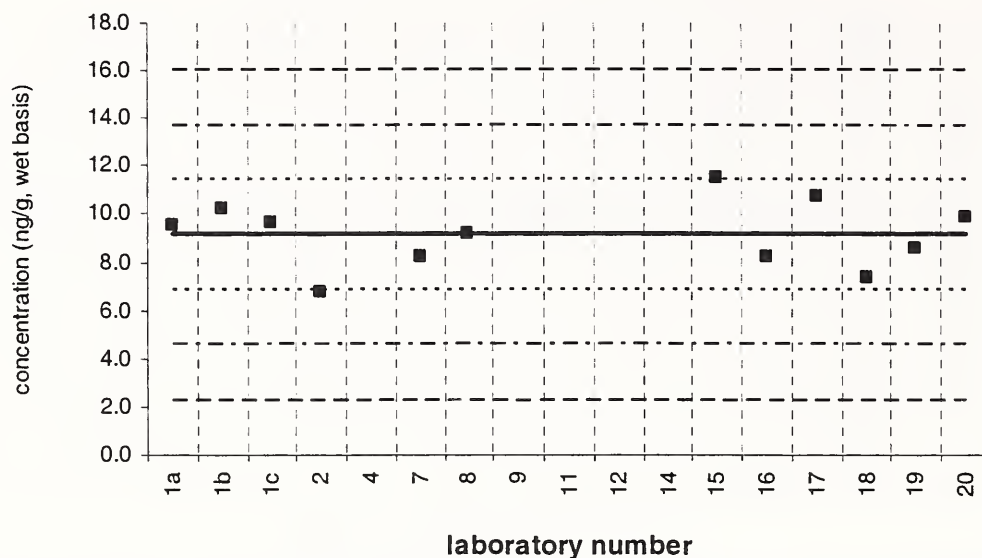
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 153

Tissue XI (QA03TIS11)

Assigned value = 9.14 ng/g $s = 1.39$ ng/g 95% CL = 0.88 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 14



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

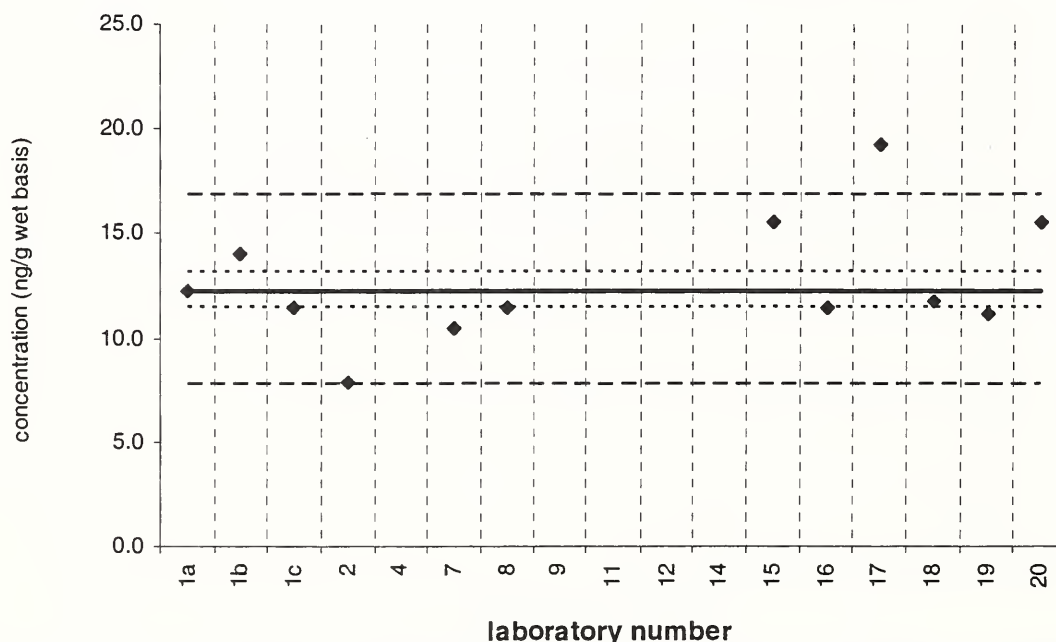
Lab 9 –
63.6; Lab
11 – 143

PCB 153

SRM 1974b

Certified Value = 12.30 ± 0.80 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 14



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
80.2; Lab
11 – 164

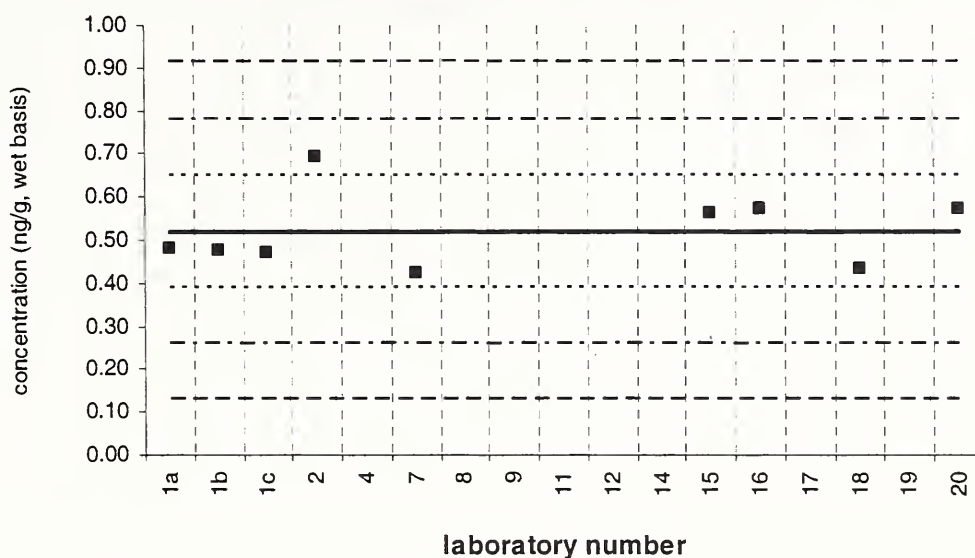
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 156

Tissue XI (QA03TIS11)

Assigned value = 0.521 ng/g $s = 0.087$ ng/g 95% CL = 0.067 ng/g (wet basis)

Reported Results: 12 Quantitative Results: 12



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

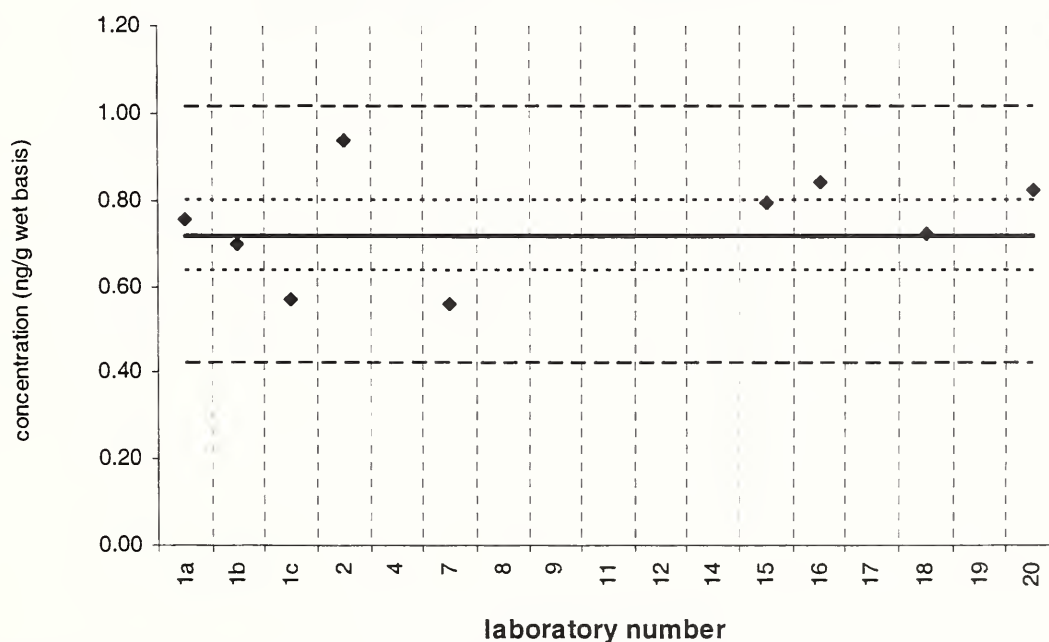
Lab 9 –
10.0; Lab
11 – 17.1;
Lab 12 –
7.75

PCB 156

SRM 1974b

Certified Value = 0.718 ± 0.080 ng/g (wet basis)

Reported Results: 12 Quantitative Results: 12



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
10.2; Lab
11 – 22.0;
Lab 12 –
7.75

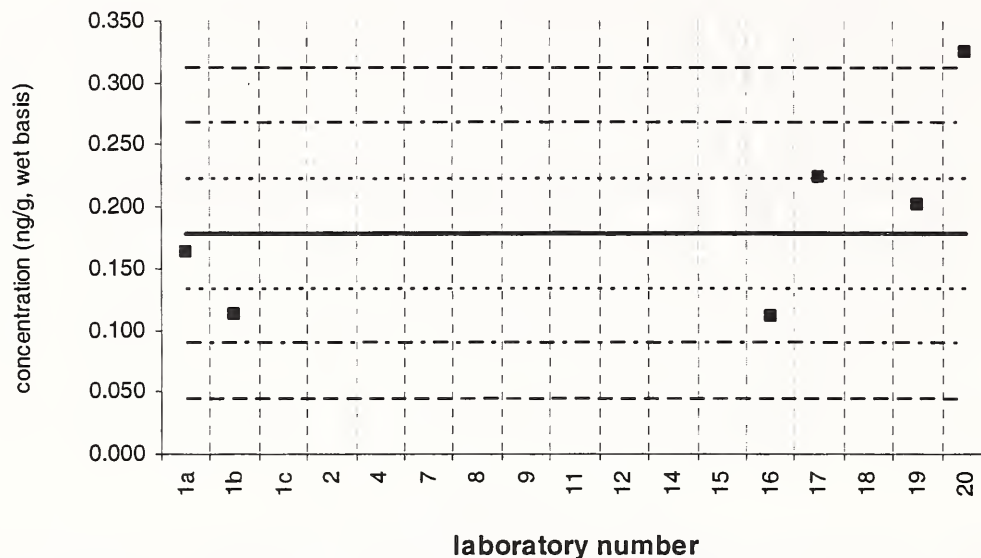
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 170

Tissue XI (QA03TIS11)

Assigned value = 0.178 ng/g s = 0.101 ng/g 95% CL = 0.161 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 8



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

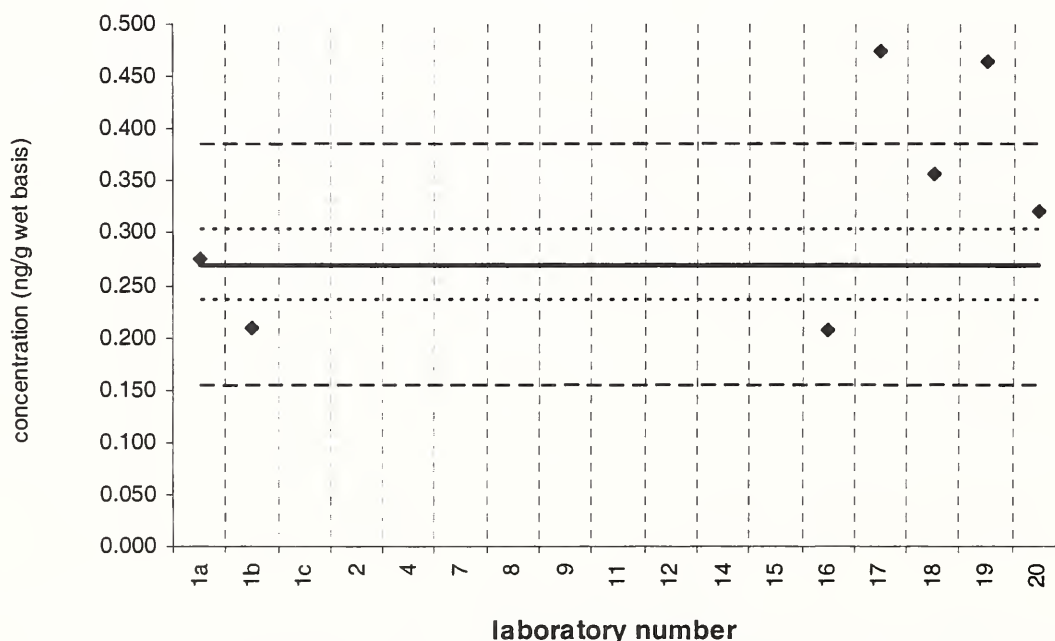
Lab 9 –
1.68; Lab
11 – 5.56

PCB 170

SRM 1974b

Certified Value = 0.269 ± 0.034 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 9



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
1.69; Lab
11 – 5.89

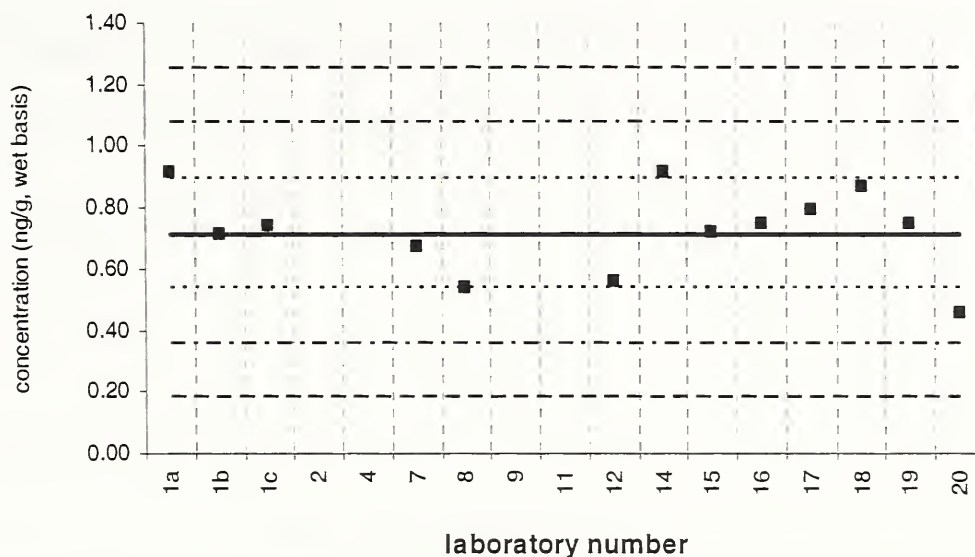
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 180

Tissue XI (QA03TIS11)

Assigned value = 0.716 ng/g $s = 0.144$ ng/g 95% CL = 0.103 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 15



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

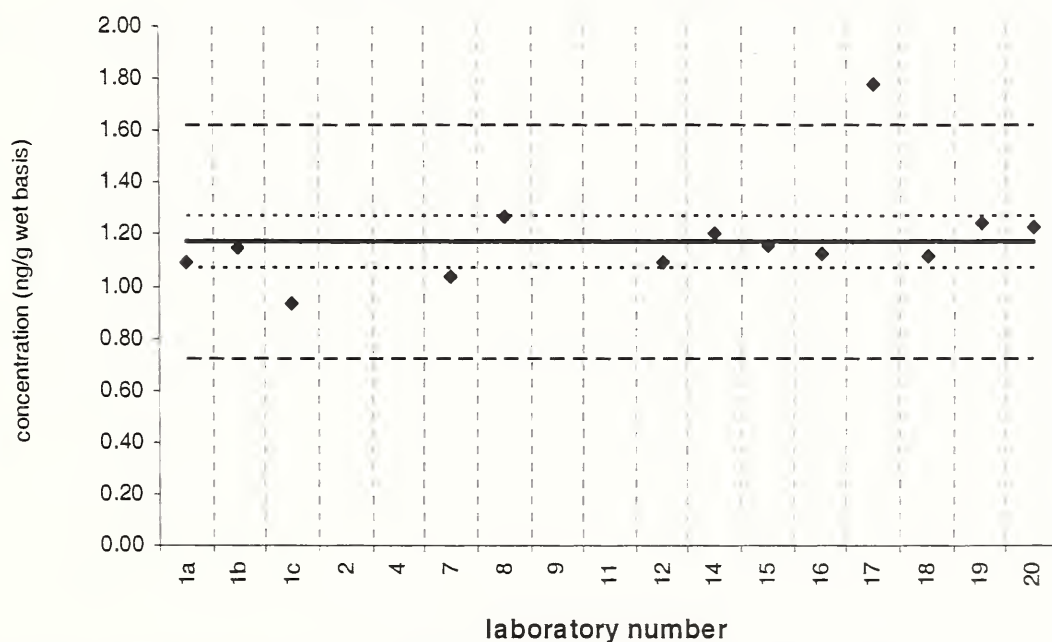
Lab 9 –
7.14; Lab
11 – 35.1

PCB 180

SRM 1974b

Certified Value = 1.17 ± 0.10 ng/g (wet basis)

Reported Results: 16 Quantitative Results: 15



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
10.2; Lab
11 – 33.4

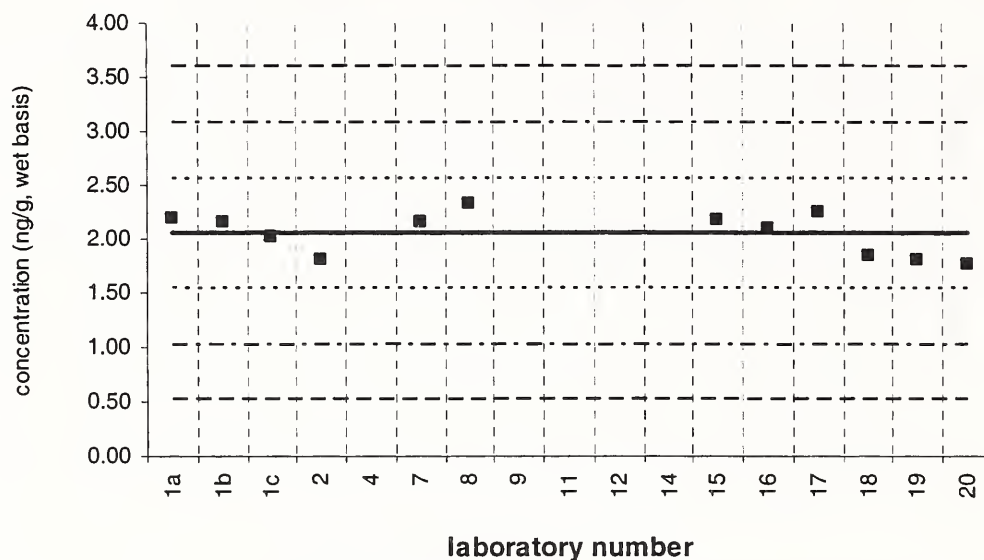
Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

PCB 187

Tissue XI (QA03TIS11)

Assigned value = 2.05 ng/g $s = 0.19$ ng/g 95% CL = 0.12 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 14



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

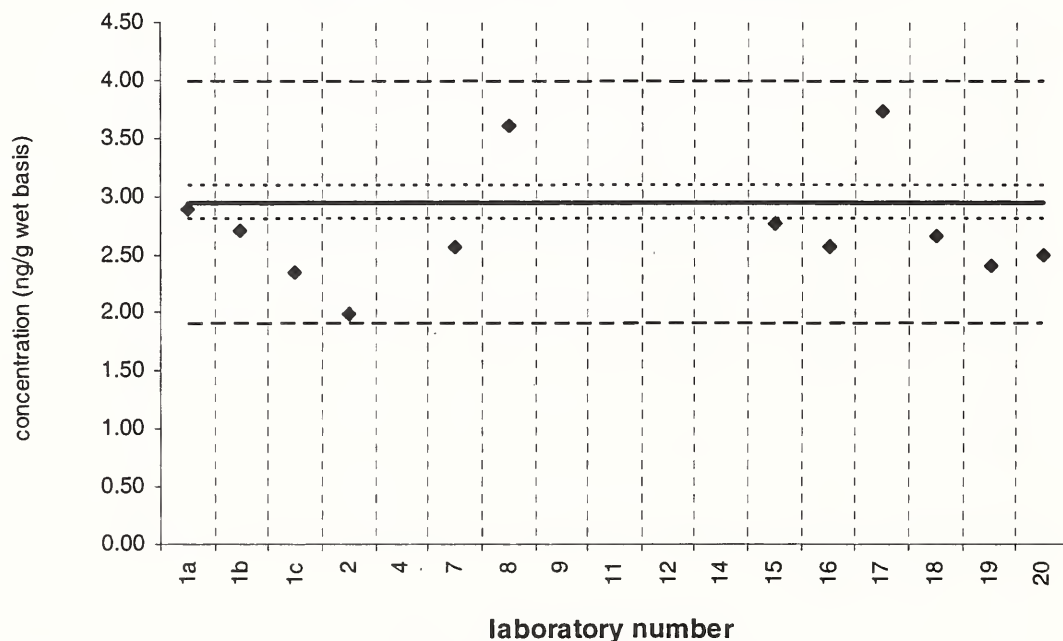
Lab 9 –
20.9; Lab
11 –29.8

PCB 187

SRM 1974b

Certified Value = 2.94 ± 0.15 ng/g (wet basis)

Reported Results: 15 Quantitative Results: 14



Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 9 –
23.4; Lab
11 –32.1

Note: Lab 9 originally submitted data in terms of wet mass. See Tables 2 through 7 for revised data (Lab 9 rev).

Appendix H: Charts of Marine Sediment XII and SRM 1941b Results by Analyte

See Tables 8 through 13 for results reported as *<number*, detection limit, etc.

Charts for analytes with few reported numerical results are not included in this appendix.

For Marine Sediment XII plots:

Solid line: exercise assigned value

Dotted line: $z = \pm 1$, i. e., 25 % from assigned value

Dotted/dashed line: $z = \pm 2$, i. e., 50 % from assigned value

Dashed line: $z = \pm 3$, i. e., 75 % from assigned value

For SRM 1941b plots:

Solid line: material certified concentration or target value (see caption of each plot)

Dotted line: 95 % confidence interval (CI)

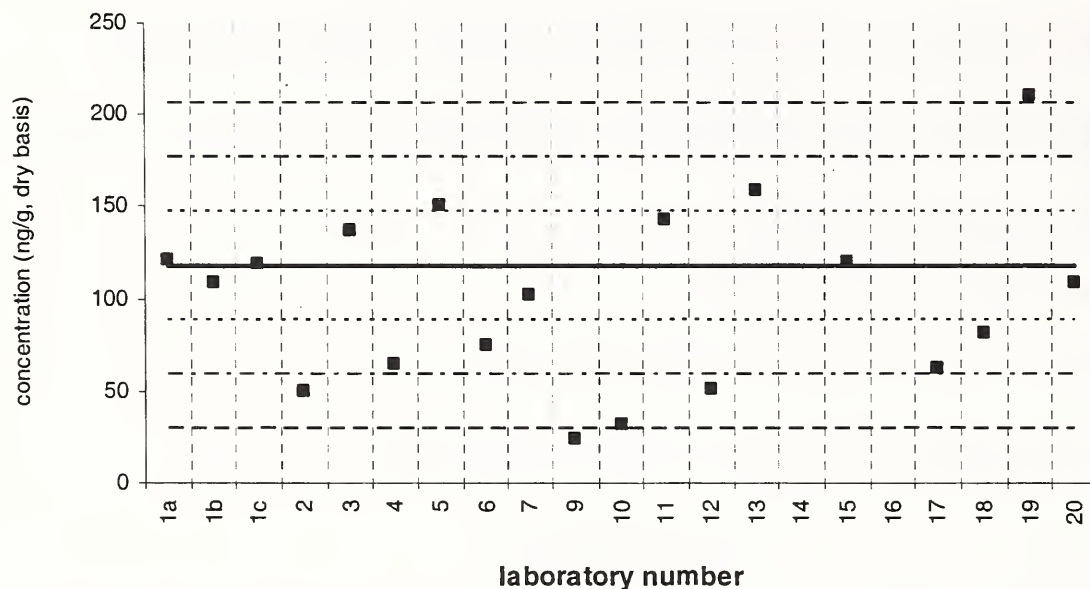
Dashed line: 30 % from 95 % confidence interval (CI)

naphthalene

Sediment XII (QA03SED12)

Assigned value = 117 ng/g $s = 39$ ng/g 95% CL = 22 ng/g (dry basis)

Reported Results: 19 Quantitative Results: 19

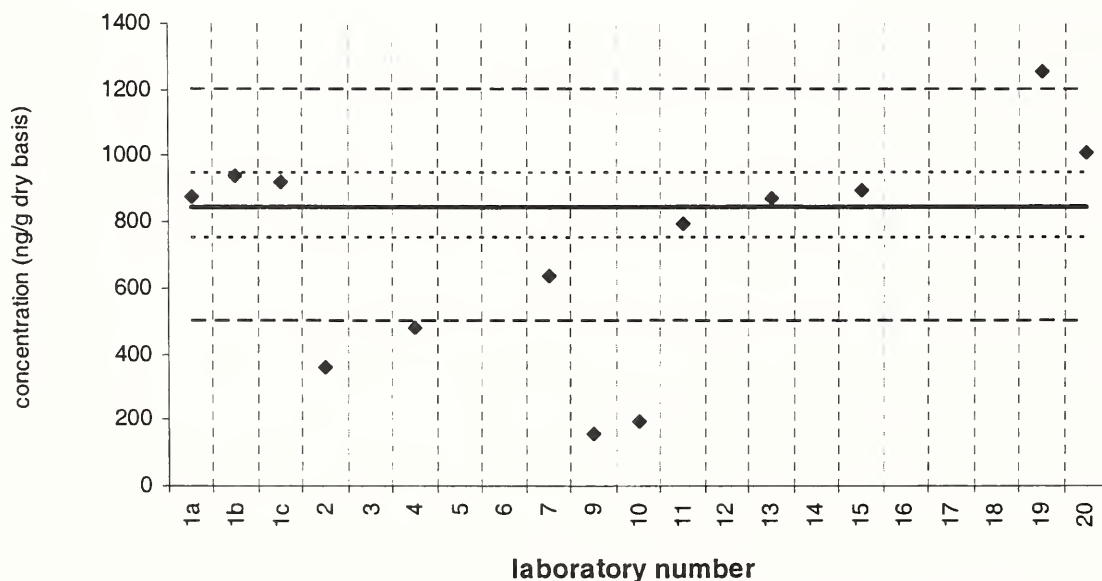


Solid line : exercise assigned value (EAV); dotted line: $z = \pm 1$ (25% from EAV); dotted/dashed line: $z = \pm 2$ (50% from EAV); dashed line: $z = \pm 3$ (75% from EAV)

naphthalene

SRM 1941b

Certified Value = 848 ± 95 ng/g (dry basis)
Reported Results: 17 Quantitative Results: 17



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

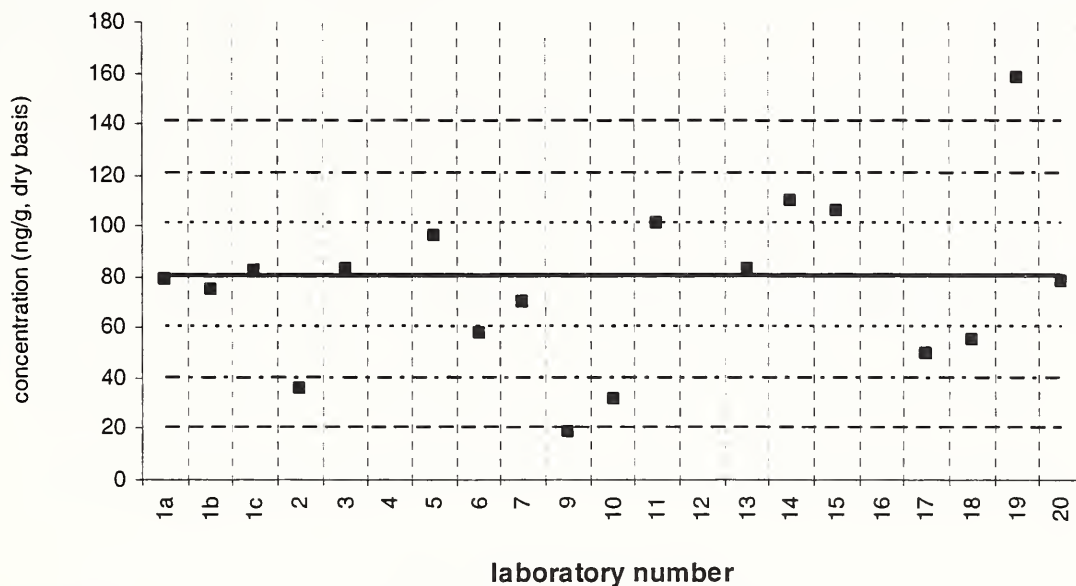
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

2-methylnaphthalene

Sediment XII (QA03SED12)

Assigned value = 80.6 ng/g $s = 29.3$ ng/g 95% CL = 16.2 ng/g (dry basis)

Reported Results: 19 Quantitative Results: 18



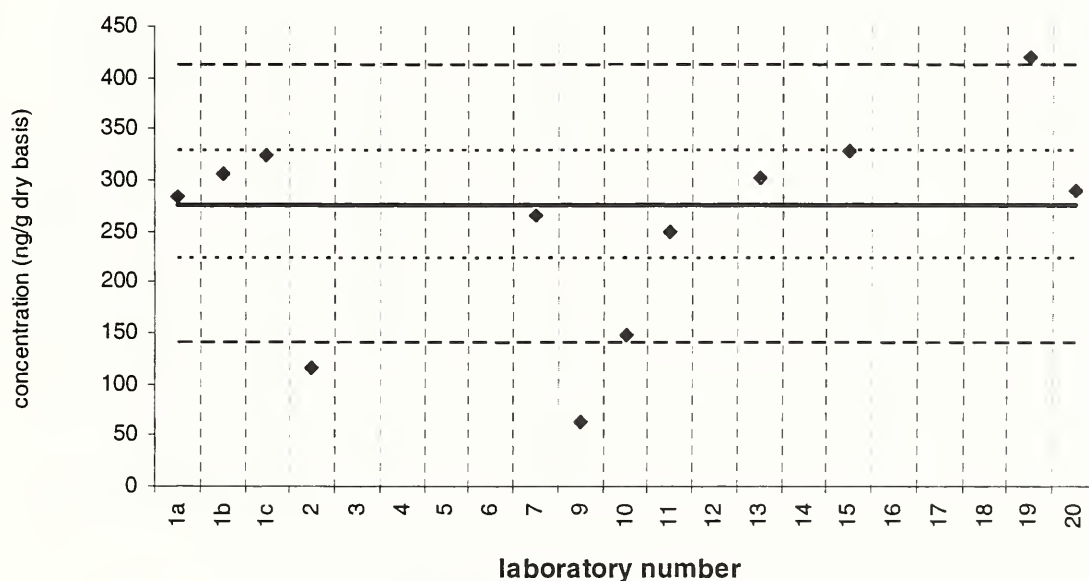
Solid line : exercise assigned value (EAV); dotted line: $z = \pm 1$ (25% from EAV); dotted/dashed line: $z = \pm 2$ (50% from EAV); dashed line: $z = \pm 3$ (75% from EAV)

2-methylnaphthalene

SRM 1941b

Reference Value = 276 ± 53 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 16



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

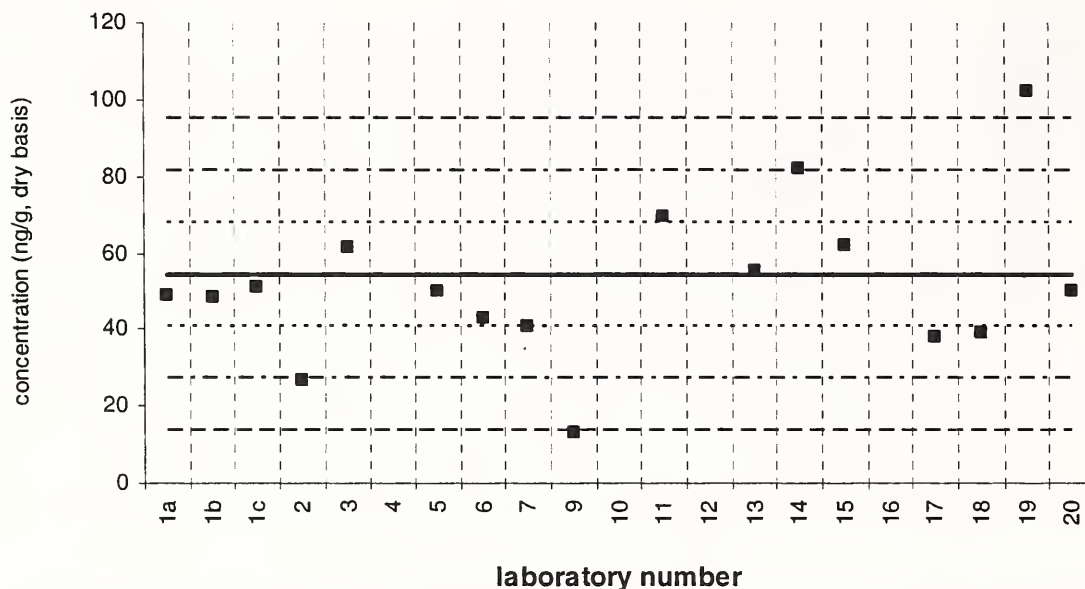
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

1-methylnaphthalene

Sediment XII (QA03SED12)

Assigned value = 54.2 ng/g $s = 16.5$ ng/g 95% CL = 9.6 ng/g (dry basis)

Reported Results: 18 Quantitative Results: 17



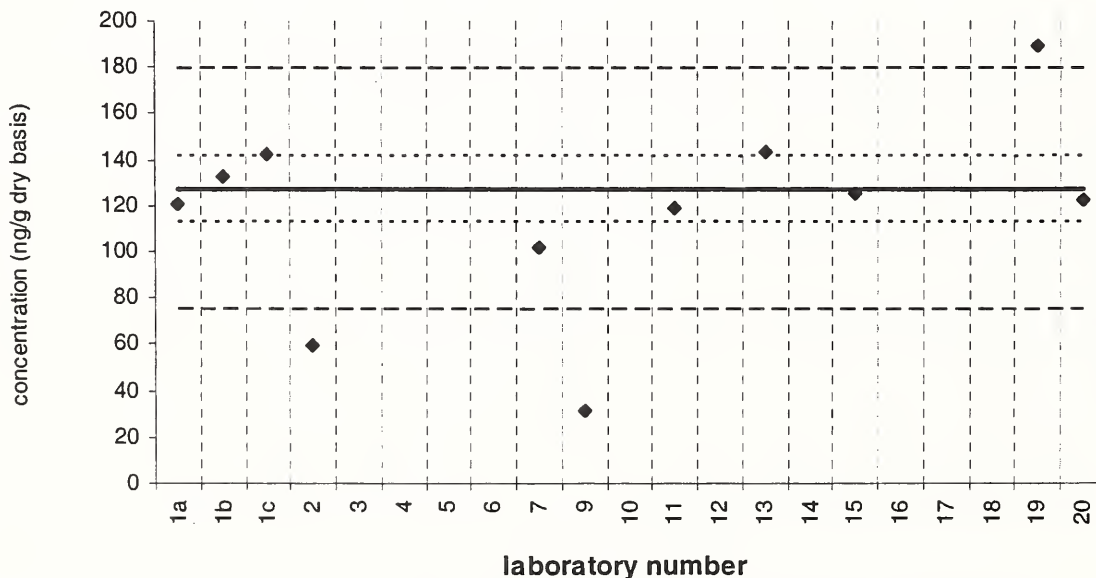
Solid line : exercise assigned value (EAV); dotted line: $z = \pm 1$ (25% from EAV); dotted/dashed line: $z = \pm 2$ (50% from EAV); dashed line: $z = \pm 3$ (75% from EAV)

1-methylnaphthalene

SRM 1941b

Reference Value = 127 ± 14 ng/g (dry basis)

Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

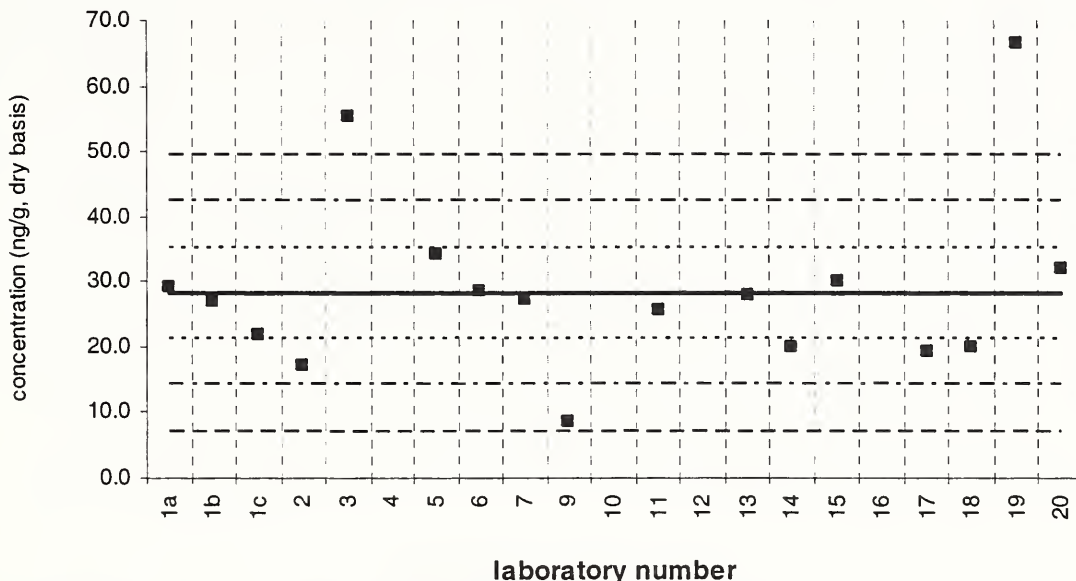
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

biphenyl

Sediment XII (QA03SED12)

Assigned value = 28.2 ng/g s = 9.3 ng/g 95% CL = 5.3 ng/g (dry basis)

Reported Results: 18 Quantitative Results: 17

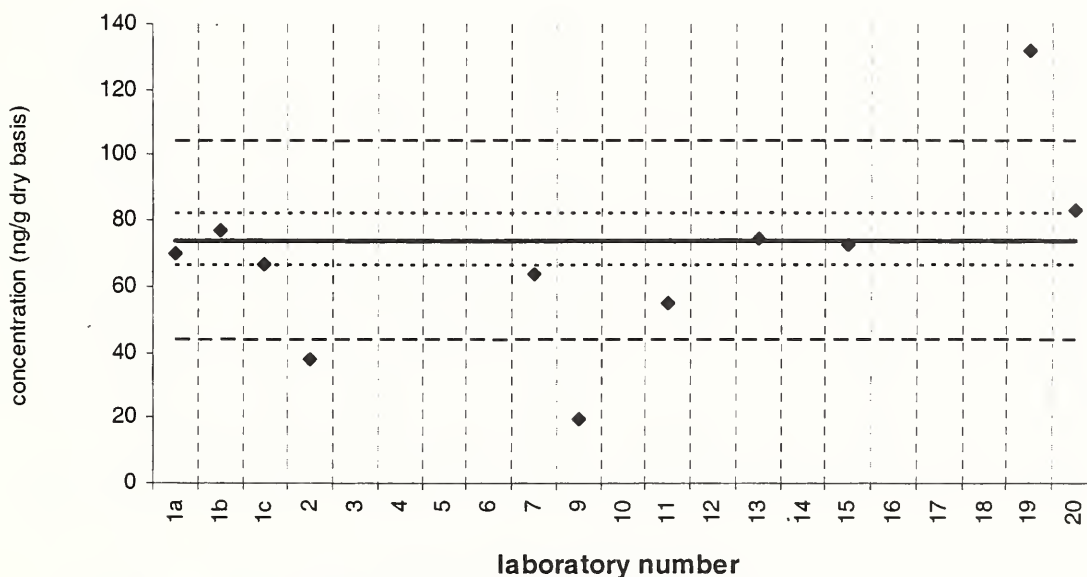


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

biphenyl

SRM 1941b

Reference Value = 74 ± 8 ng/g (dry basis)
Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

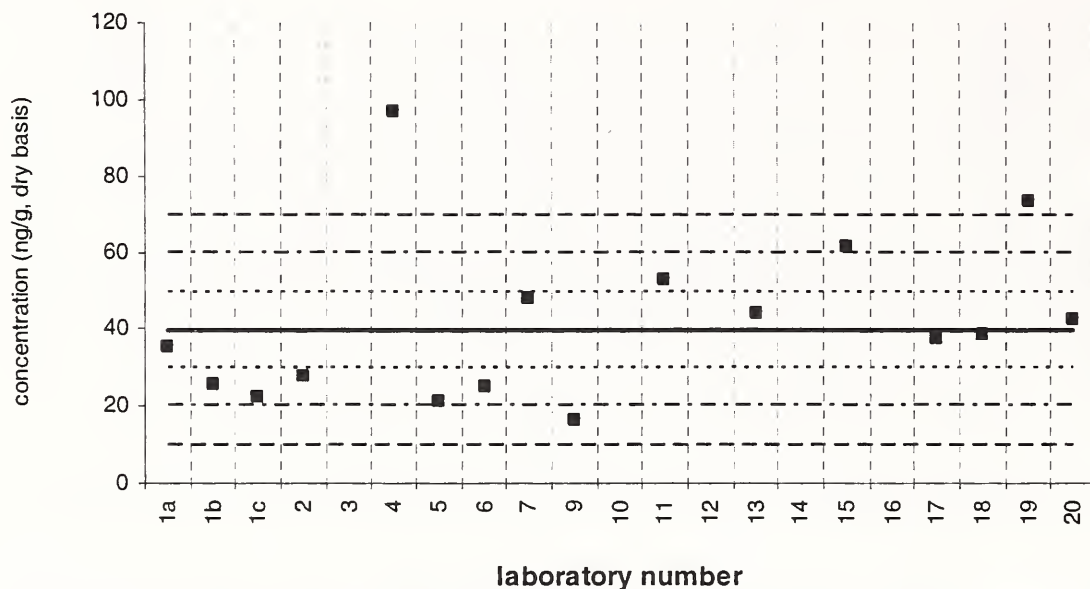
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

2,6-dimethylnaphthalene

Sediment XII (QA03SED12)

Assigned value = 39.7 ng/g $s = 19.9$ ng/g 95% CL = 12.0 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 16

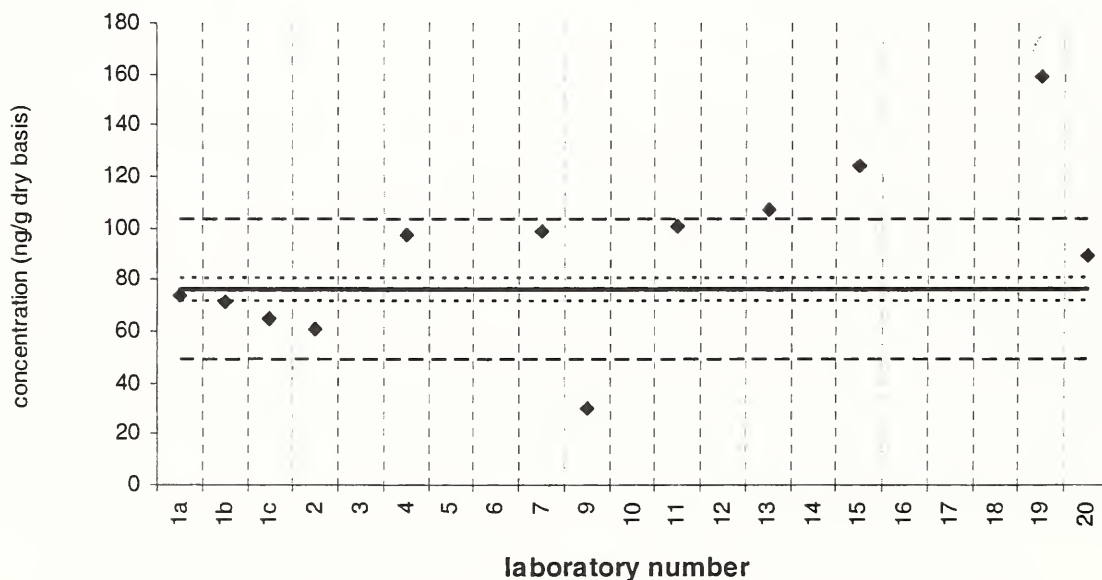


Solid line : exercise assigned value (EAV); dotted line: $z = \pm 1$ (25% from EAV); dotted/dashed line: $z = \pm 2$ (50% from EAV); dashed line: $z = \pm 3$ (75% from EAV)

2,6-dimethylnaphthalene

SRM 1941b

Reference Value = 75.9 ± 4.5 ng/g (dry basis)
Reported Results: 16 Quantitative Results: 16



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

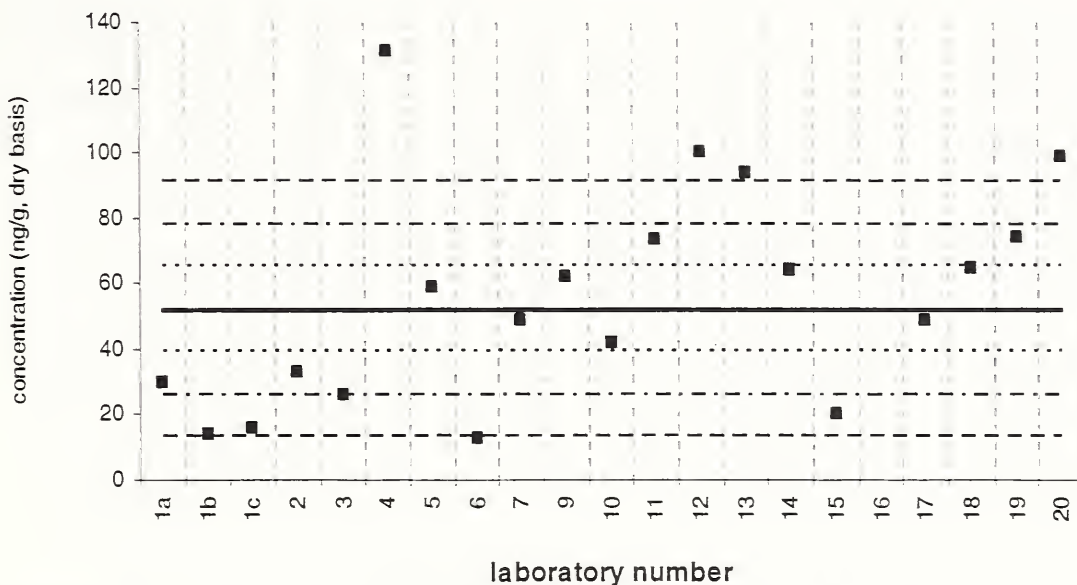
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

acenaphthylene

Sediment XII (QA03SED12)

Assigned value = 52.0 ng/g $s = 34.5$ ng/g 95% CL = 18.4 ng/g (dry basis)

Reported Results: 20 Quantitative Results: 20

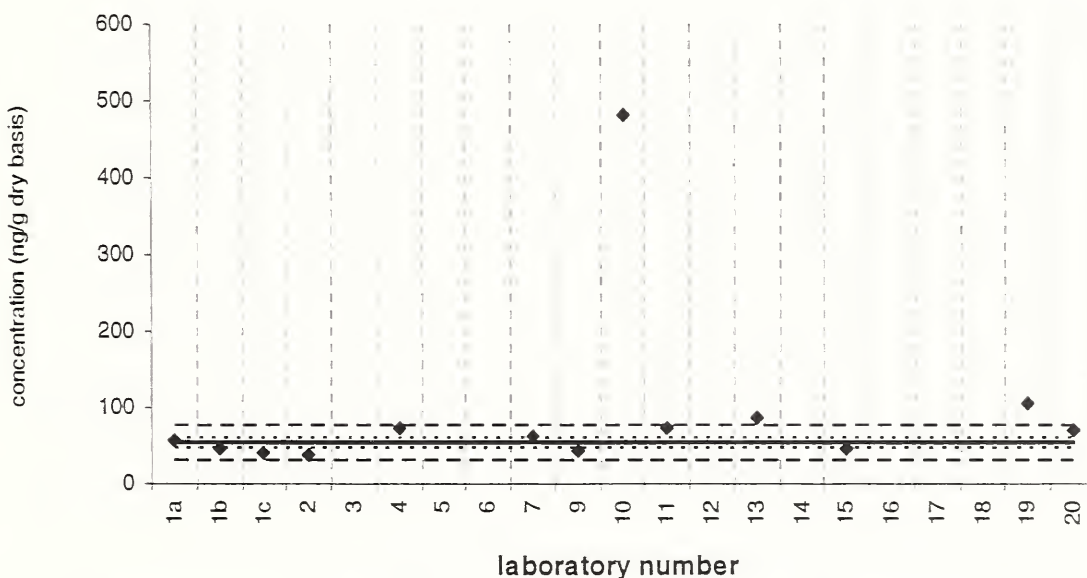


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

acenaphthylene

SRM 1941b

Reference Value = 53.3 ± 6.4 ng/g (dry basis)
Reported Results: 17 Quantitative Results: 17



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

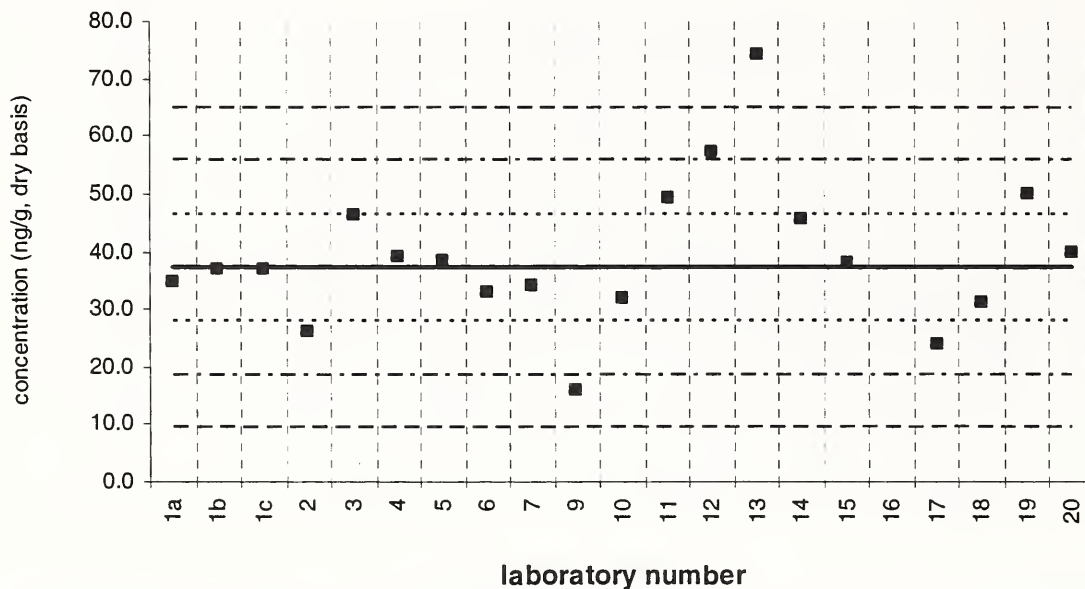
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

acenaphthene

Sediment XII (QA03SED12)

Assigned value = 37.1 ng/g $s = 7.4$ ng/g 95% CL = 4.1 ng/g (dry basis)

Reported Results: 20 Quantitative Results: 20



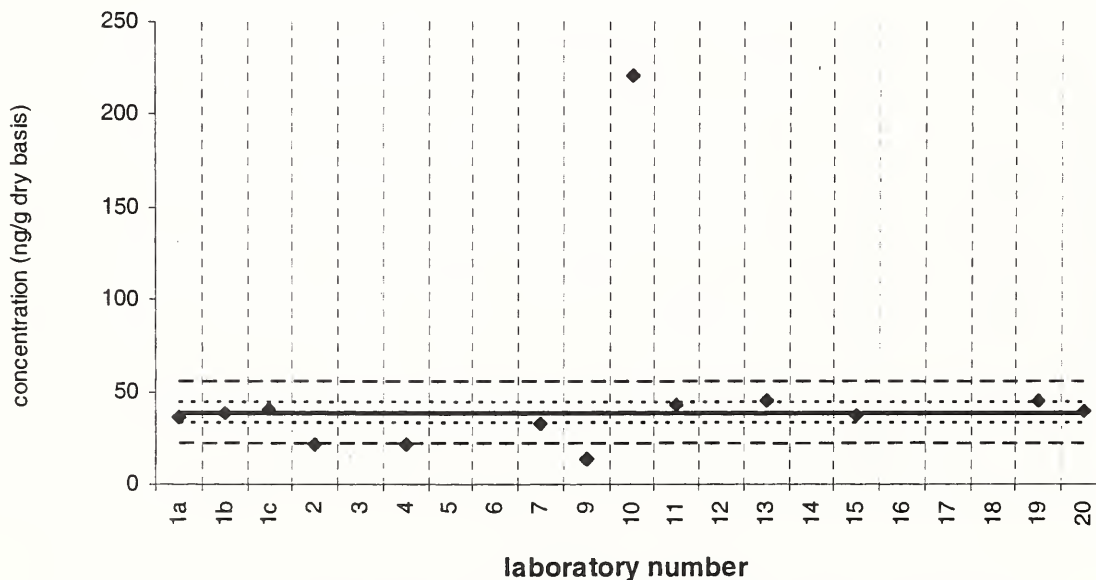
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

acenaphthene

SRM 1941b

Reference Value = 38.4 ± 5.2 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 17



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

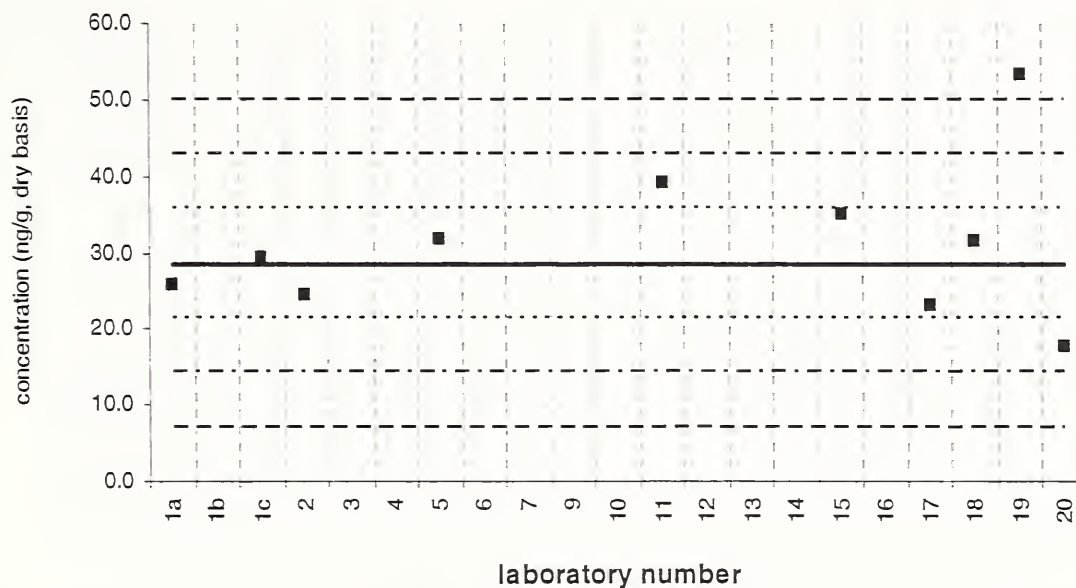
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

1,6,7-trimethylnaphthalene

Sediment XII (QA03SED12)

Assigned value = 28.6 ng/g $s = 6.6$ ng/g 95% CL = 5.1 ng/g (dry basis)

Reported Results: 11 Quantitative Results: 10



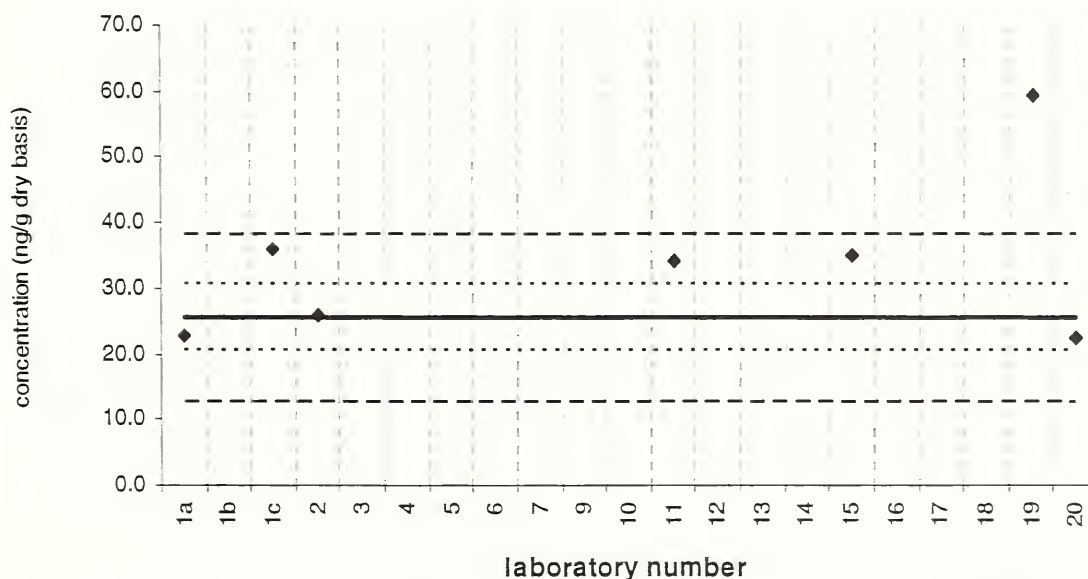
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

1,6,7-trimethylnaphthalene

SRM 1941b

Reference Value = 25.5 \pm 5.1 ng/g (dry basis)

Reported Results: 10 Quantitative Results: 10



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

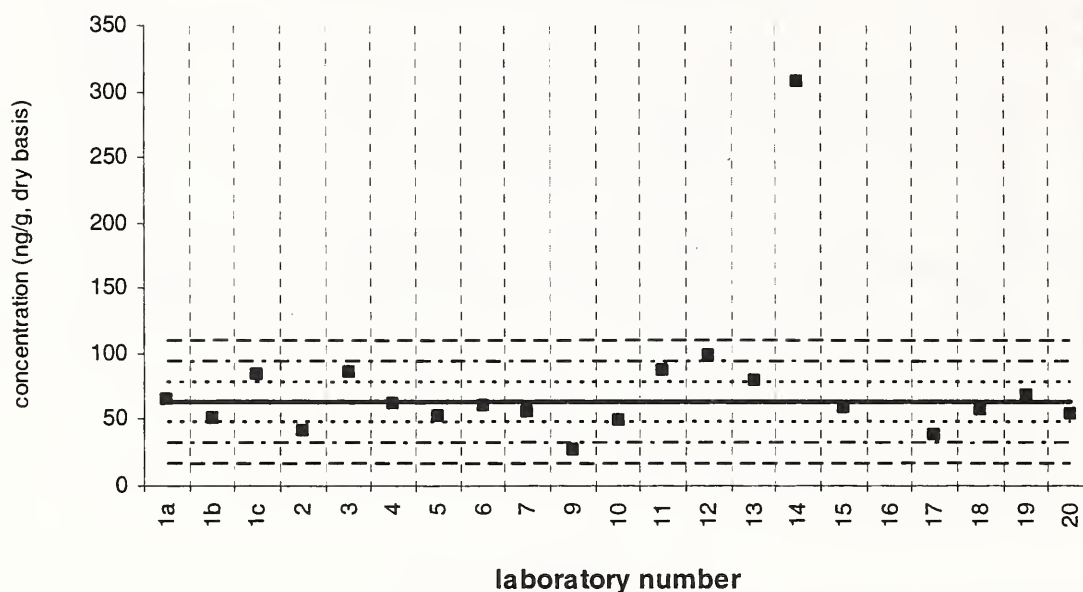
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

fluorene

Sediment XII (QA03SED12)

Assigned value = 62.6 ng/g $s = 15.2$ ng/g 95% CL = 8.1 ng/g (dry basis)

Reported Results: 20 Quantitative Results: 20

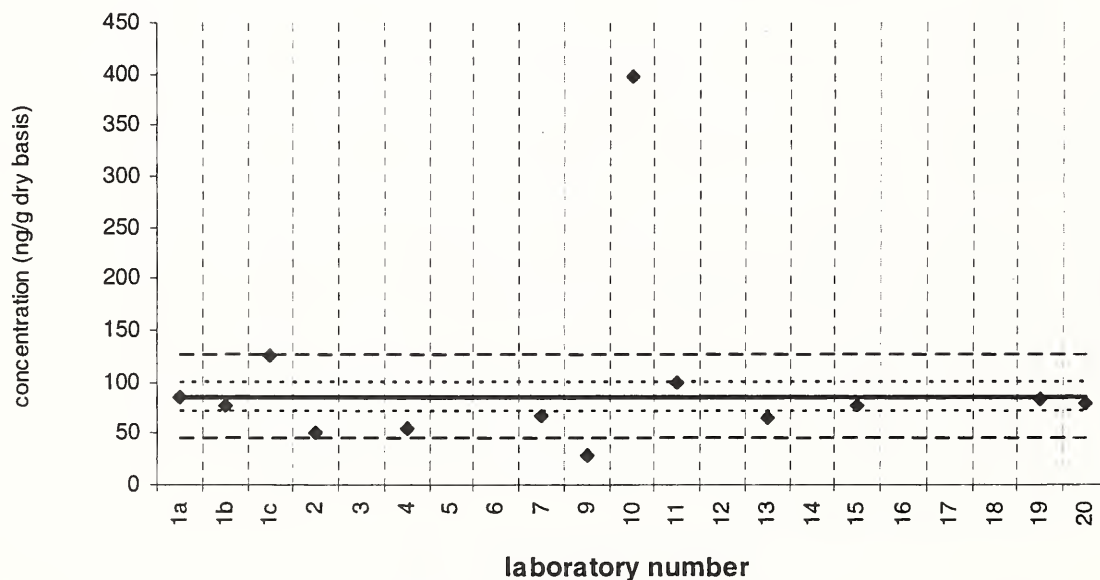


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

fluorene

SRM 1941b

Certified Value = 85 ± 15 ng/g (dry basis)
Reported Results: 17 Quantitative Results: 17



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

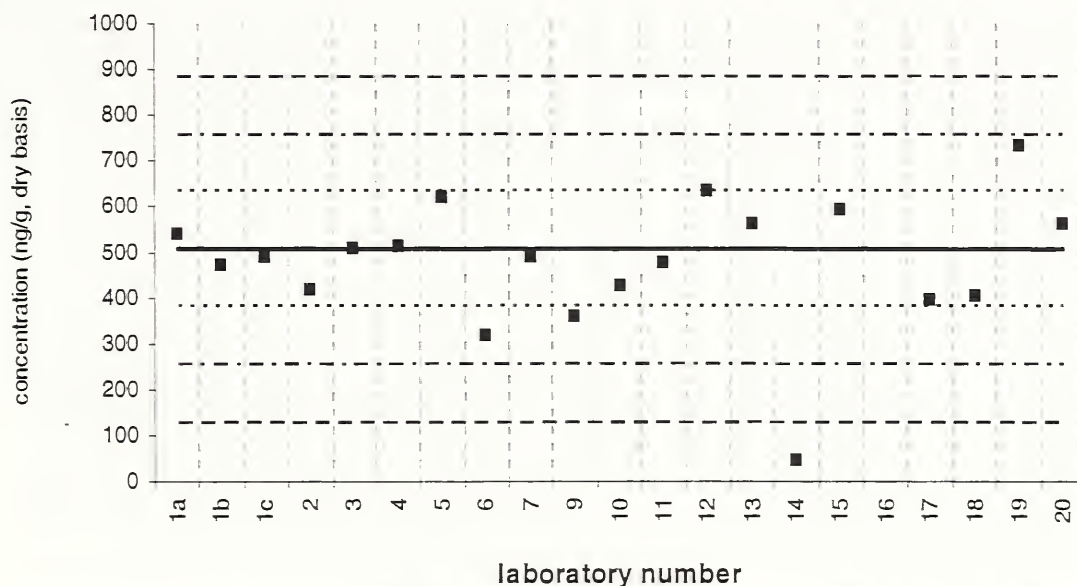
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

phenanthrene

Sediment XII (QA03SED12)

Assigned value = 505 ng/g $s = 100$ ng/g 95% CL = 53 ng/g (dry basis)

Reported Results: 20 Quantitative Results: 20

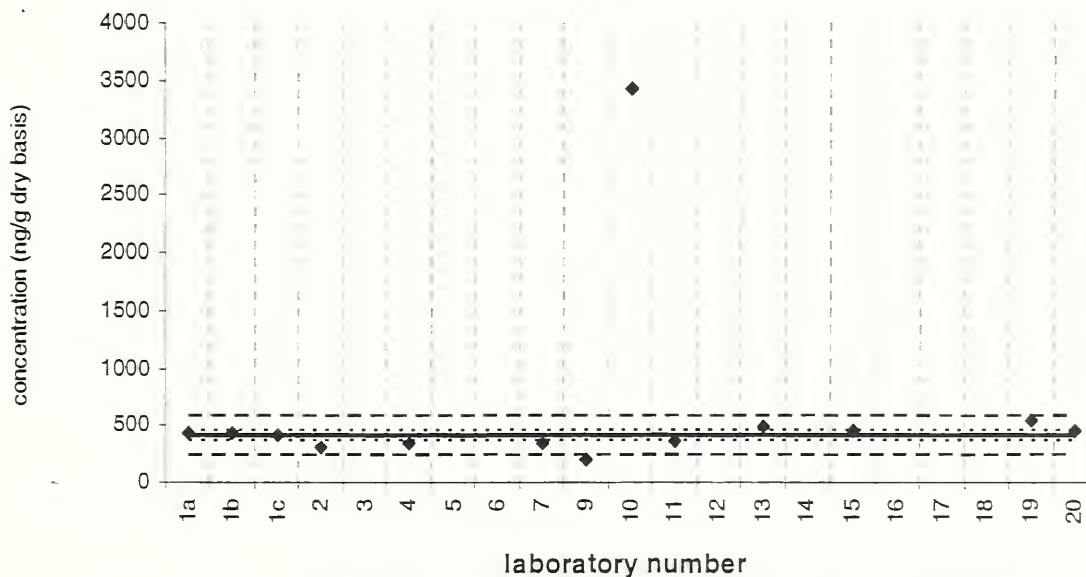


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

phenanthrene

SRM 1941b

Certified Value = 406 ± 44 ng/g (dry basis)
Reported Results: 17 Quantitative Results: 17



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

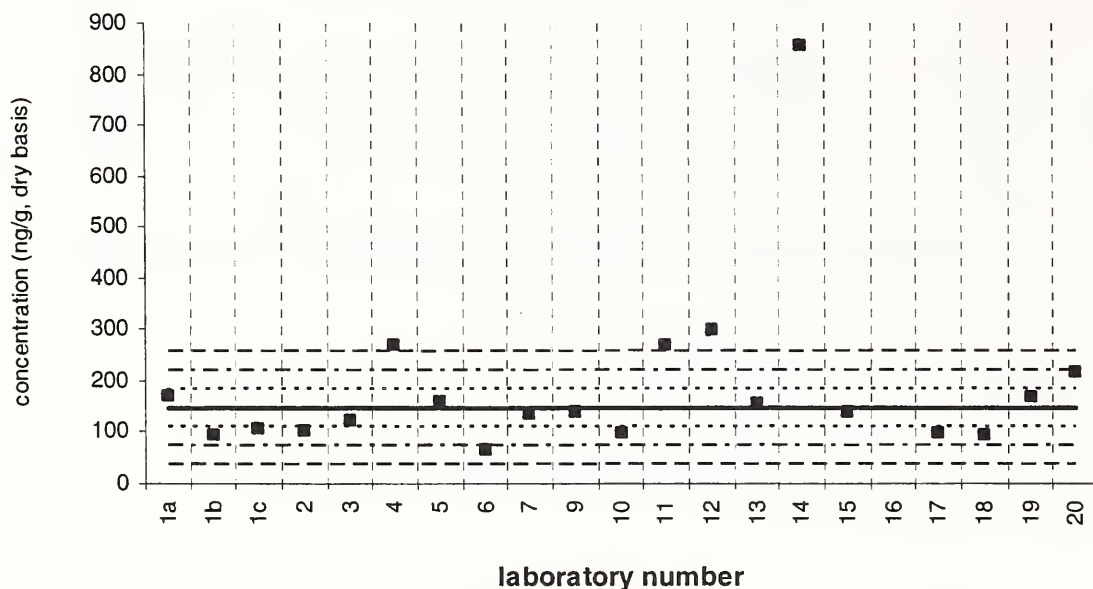
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

anthracene

Sediment XII (QA03SED12)

Assigned value = 147 ng/g s = 60 ng/g 95% CL = 32 ng/g (dry basis)

Reported Results: 20 Quantitative Results: 20



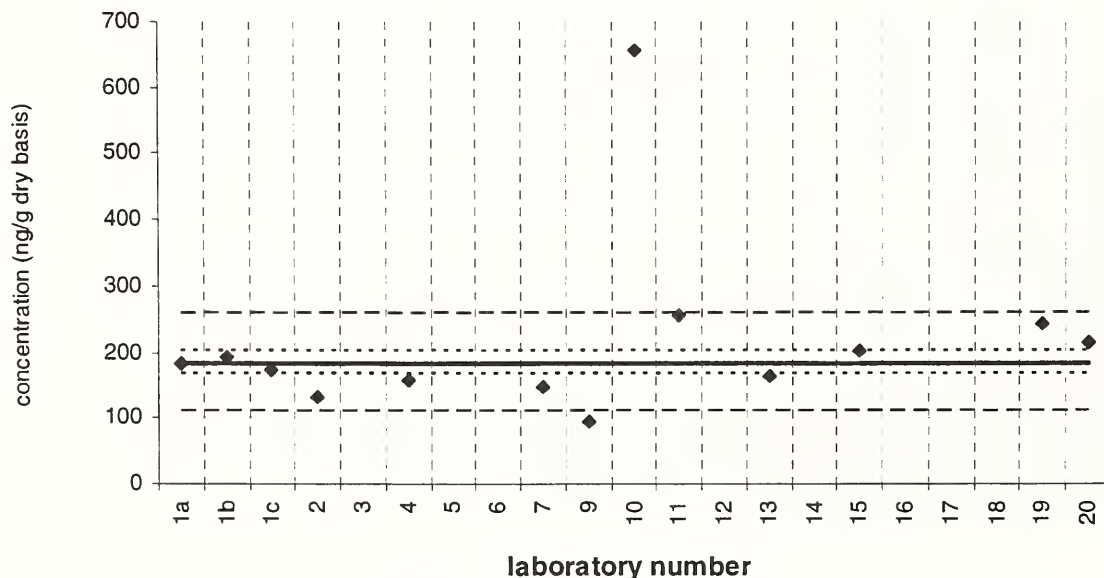
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

anthracene

SRM 1941b

Certified Value = 184 ± 18 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 17



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

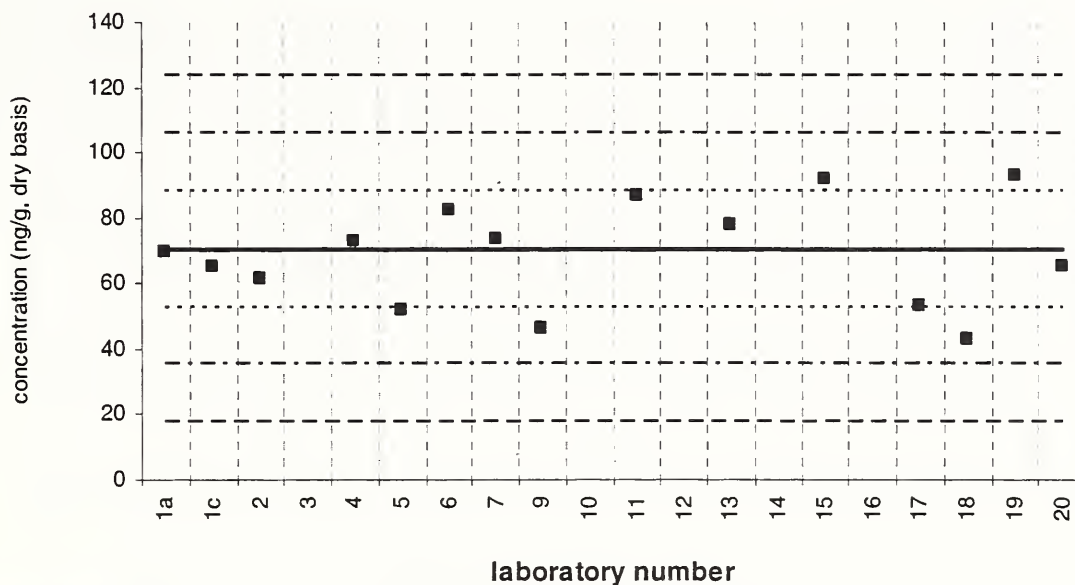
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

1-methylphenanthrene

Sediment XII (QA03SED12)

Assigned value = 70.5 ng/g $s = 15.2$ ng/g 95% CL = 8.8 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 15



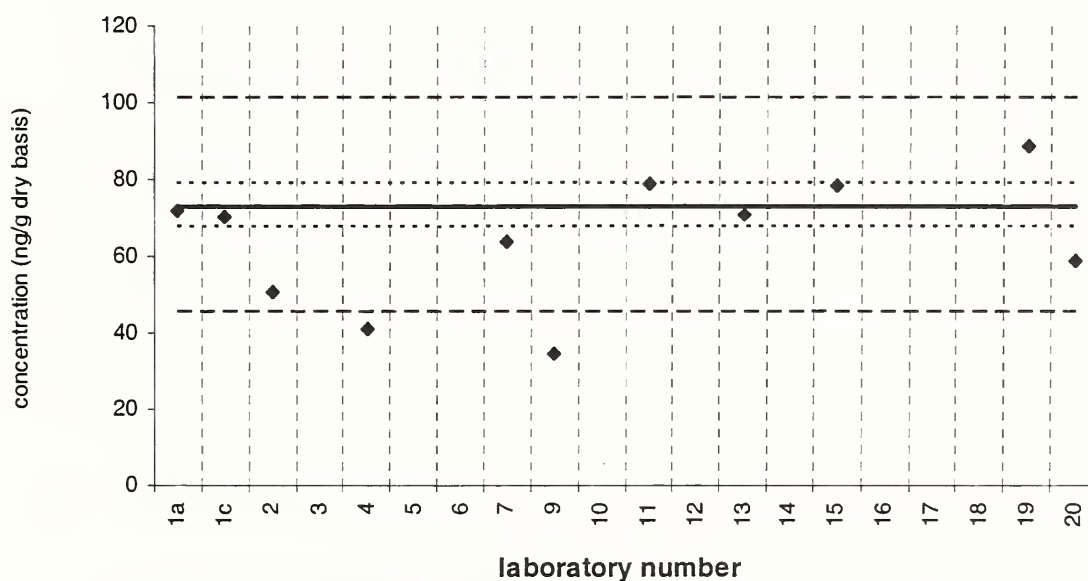
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

1-methylphenanthrene

SRM 1941b

Certified Value = 73.2 ± 5.9 ng/g (dry basis)

Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

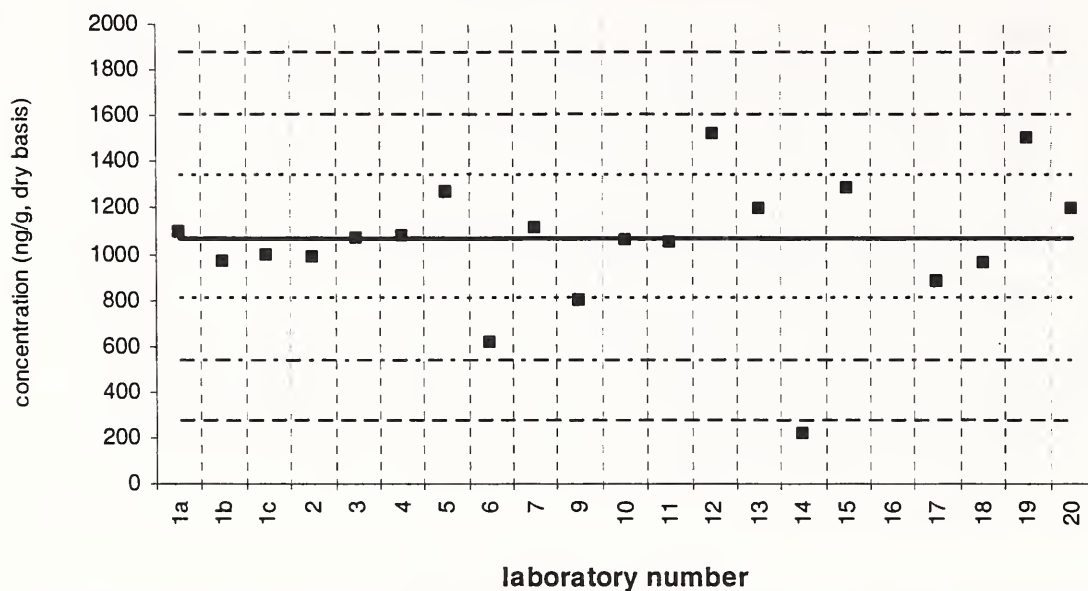
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

fluoranthene

Sediment XII (QA03SED12)

Assigned value = 1070 ng/g $s = 203$ ng/g 95% CL = 112 ng/g (dry basis)

Reported Results: 20 Quantitative Results: 20



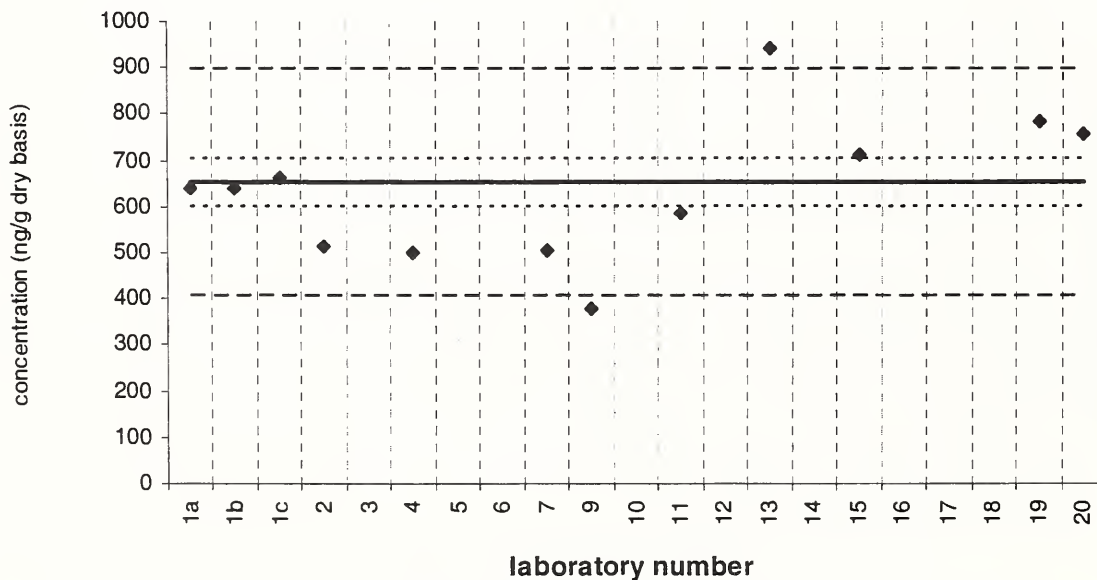
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

fluoranthene

SRM 1941b

Certified Value = 651 \pm 50 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 17



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

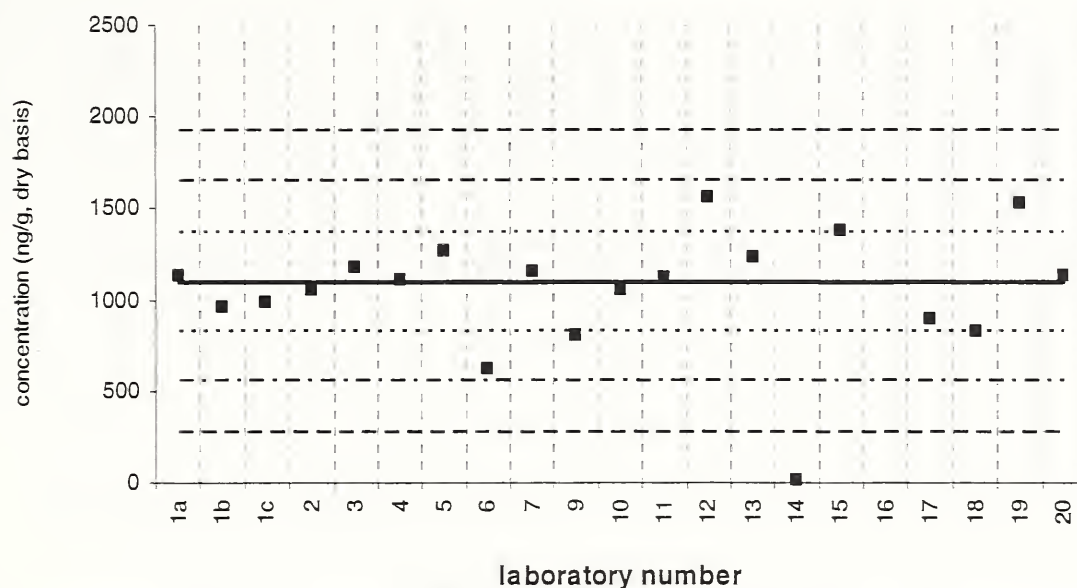
Lab 10 –
6656 ng/g

pyrene

Sediment XII (QA03SED12)

Assigned value = 1099 ng/g $s = 216$ ng/g 95% CL = 115 ng/g (dry basis)

Reported Results: 20 Quantitative Results: 20

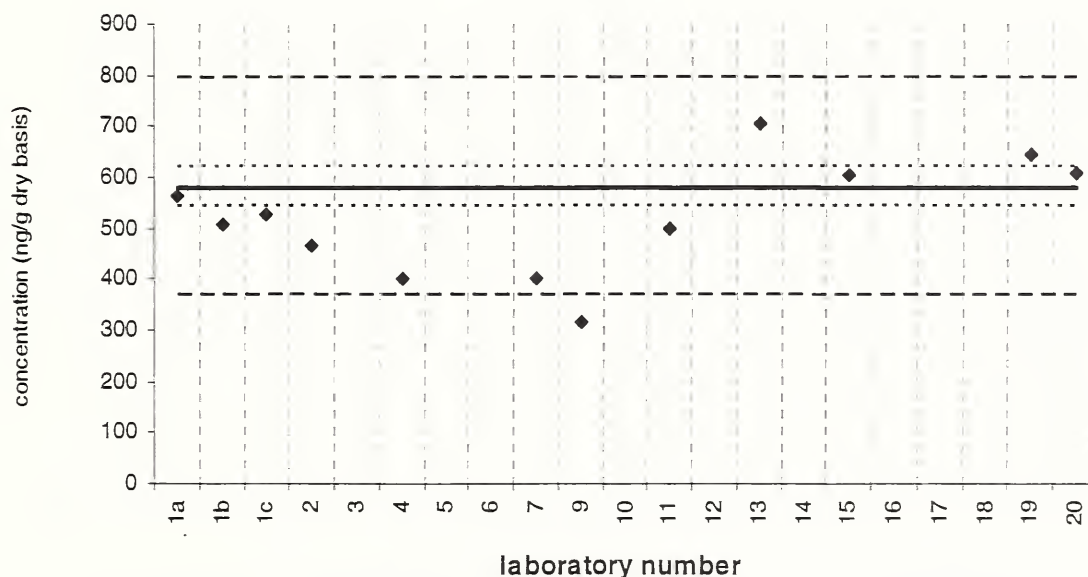


Solid line : exercise assigned value (EAV); dotted line: $z = \pm 1$ (25% from EAV); dotted/dashed line: $z = \pm 2$ (50% from EAV); dashed line: $z = \pm 3$ (75% from EAV)

pyrene

SRM 1941b

Certified Value = 581 ± 39 ng/g (dry basis)
Reported Results: 17 Quantitative Results: 17



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

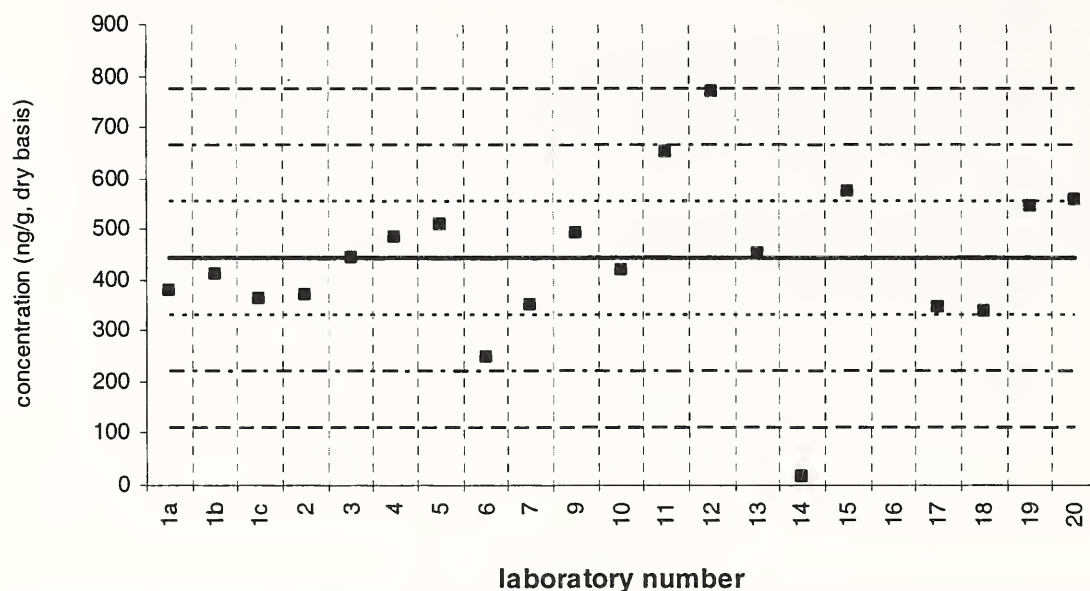
Lab 10 –
6572 ng/g

benz[a]anthracene

Sediment XII (QA03SED12)

Assigned value = 442 ng/g $s = 105$ ng/g 95% CL = 54 ng/g (dry basis)

Reported Results: 20 Quantitative Results: 20



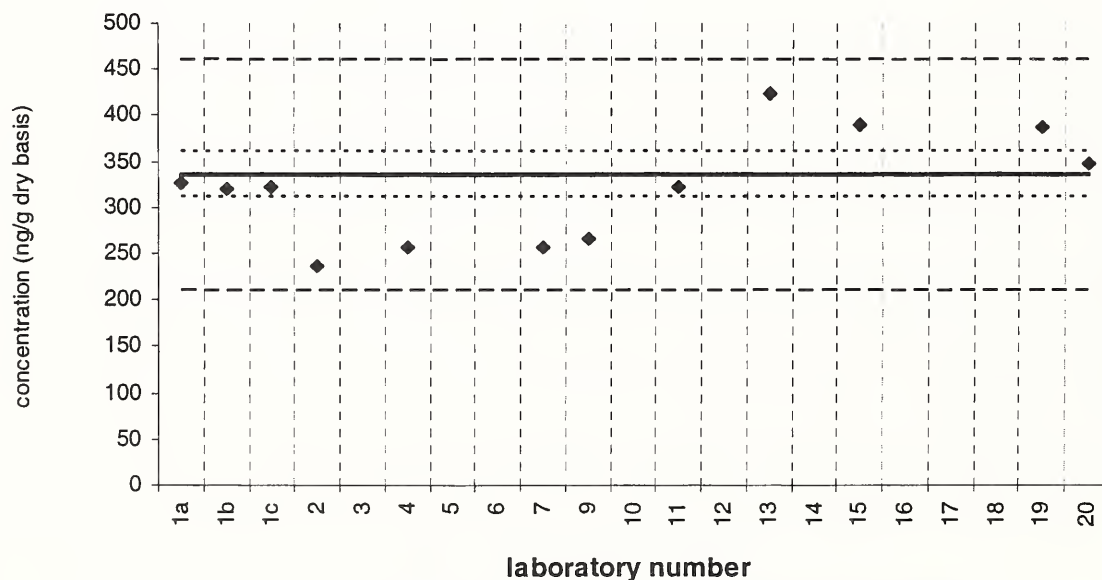
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

benz[a]anthracene

SRM 1941b

Certified Value = 335 ± 25 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 17



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

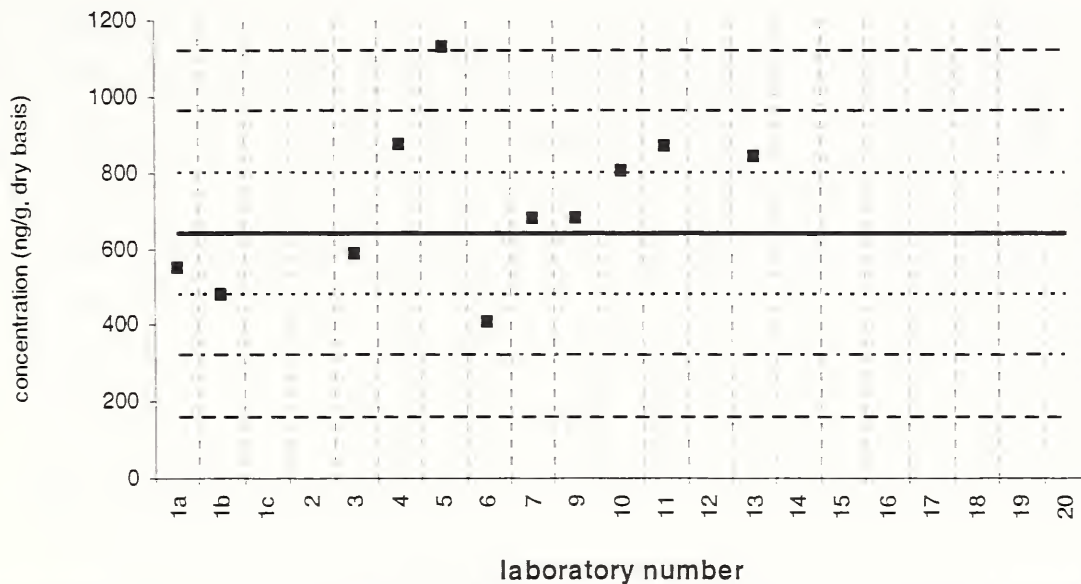
Lab 10 –
3310 ng/g

chrysene

Sediment XII (QA03SED12)

Assigned value = 640 ng/g s = 170 ng/g 95% CL = 142 ng/g (dry basis)

Reported Results: 11 Quantitative Results: 11

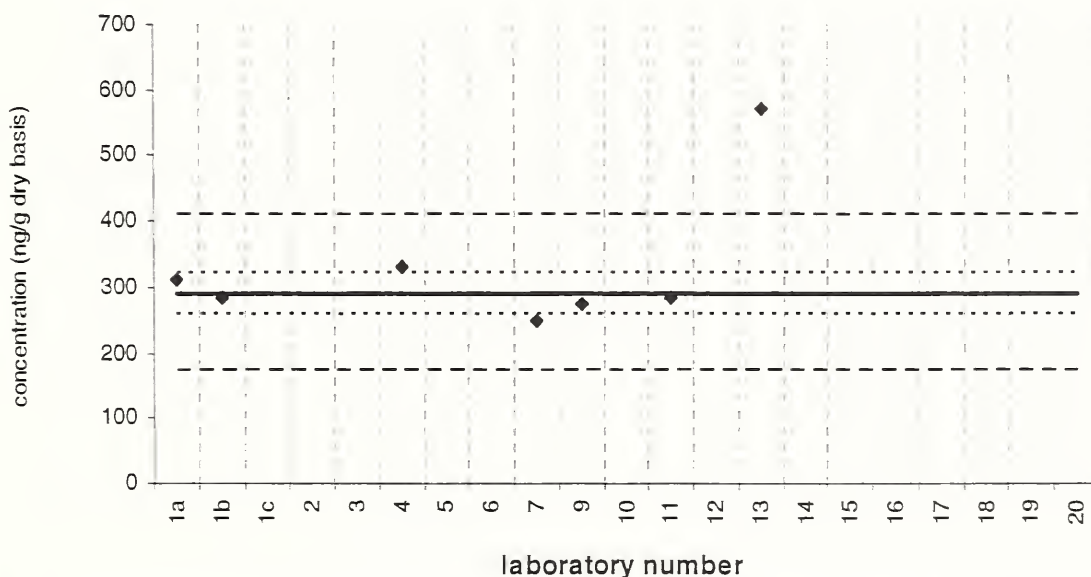


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

chrysene

SRM 1941b

Certified Value = 291 ± 31 ng/g (dry basis)
Reported Results: 10 Quantitative Results: 10



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

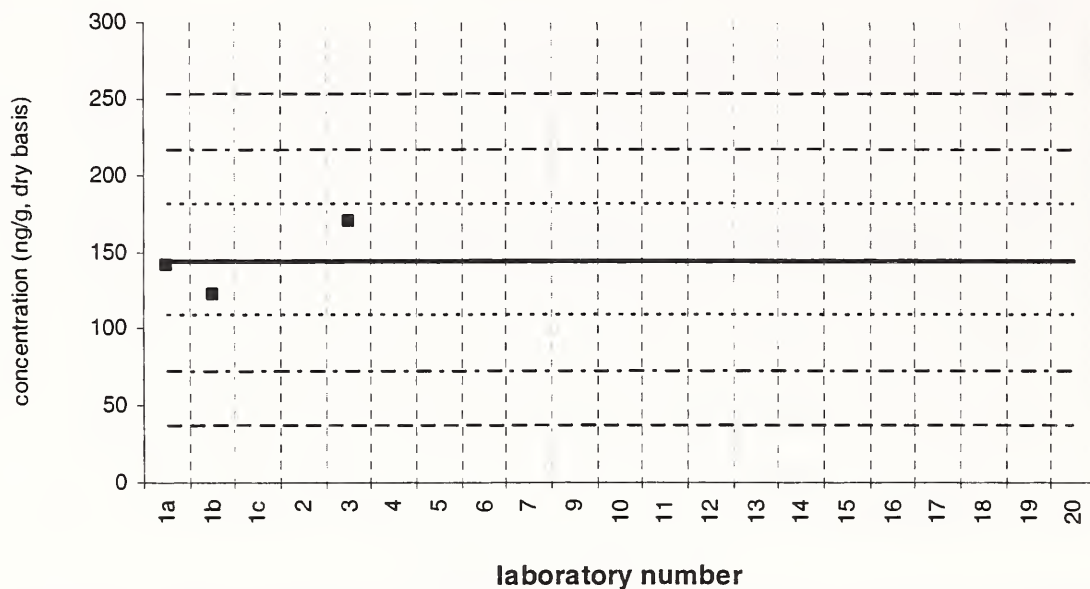
Lab 10 –
4280 ng/g

triphenylene

Sediment XII (QA03SED12)

Assigned value = 144 ng/g $s = 24$ ng/g 95% CL = 60 ng/g (dry basis)

Reported Results: 3 Quantitative Results: 3

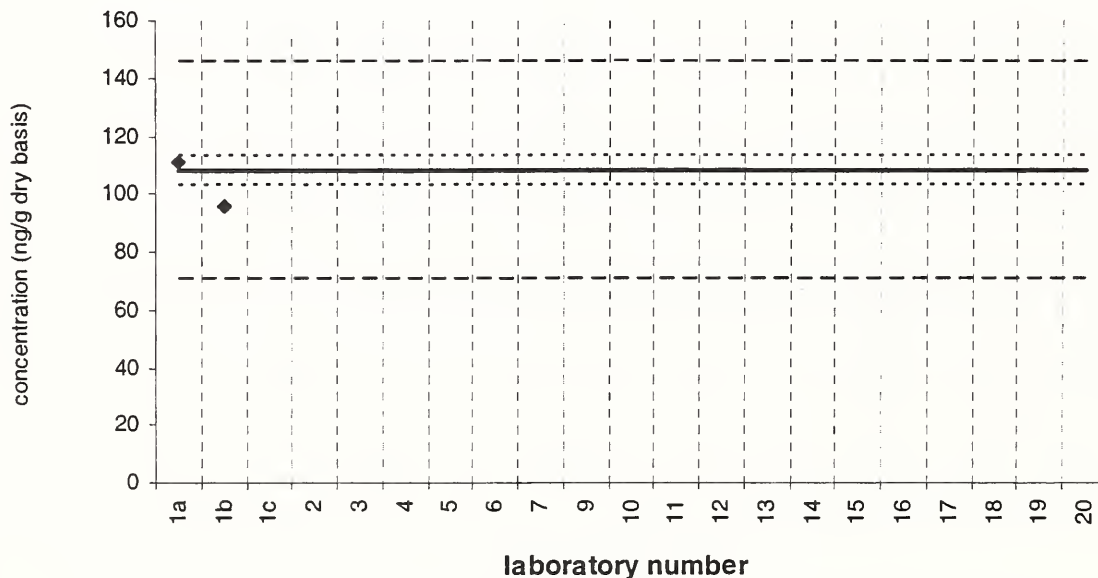


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

triphenylene

SRM 1941b

Certified Value = 108 ± 5 ng/g (dry basis)
Reported Results: 2 Quantitative Results: 2

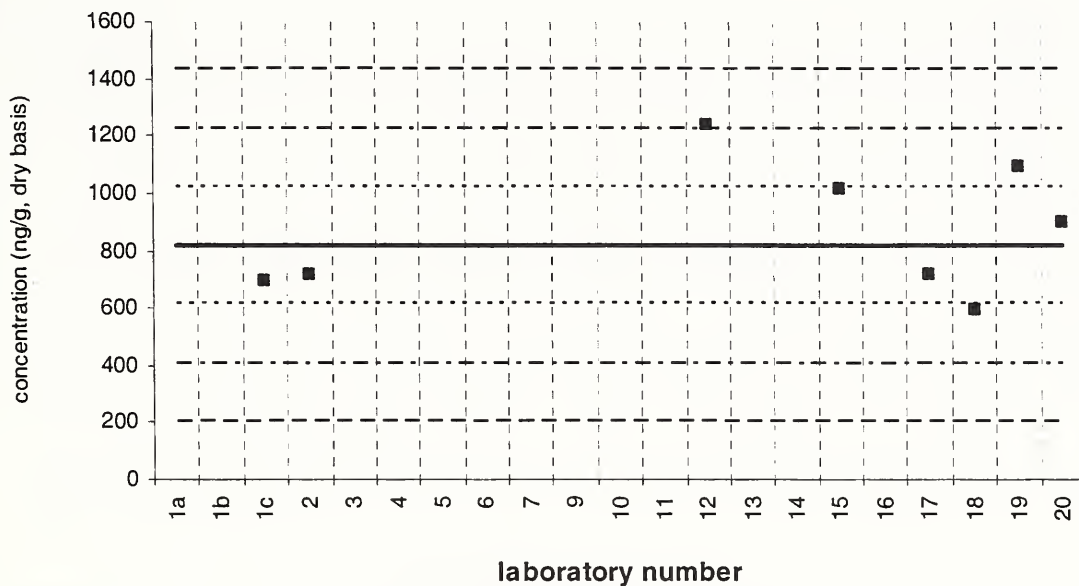


Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

chrysene+triphenylene**Sediment XII (QA03SED12)**Assigned value = 817 ng/g $s = 185$ ng/g 95% CL = 154 ng/g (dry basis)

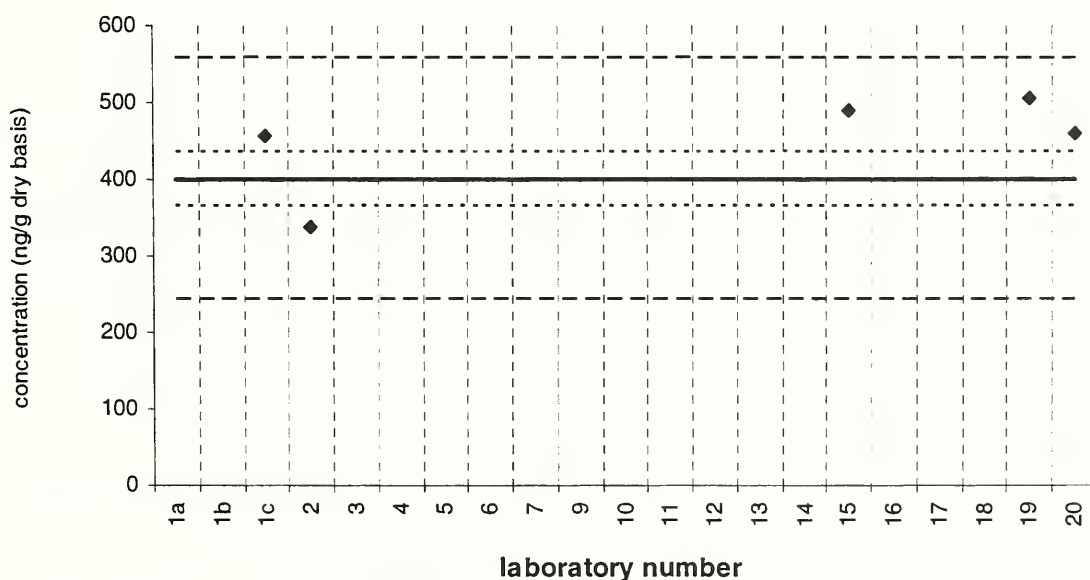
Reported Results: 8 Quantitative Results: 8



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

chrysene+triphenylene**SRM 1941b**Target Value = 400 ± 36 ng/g (dry basis)

Reported Results: 7 Quantitative Results: 7



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

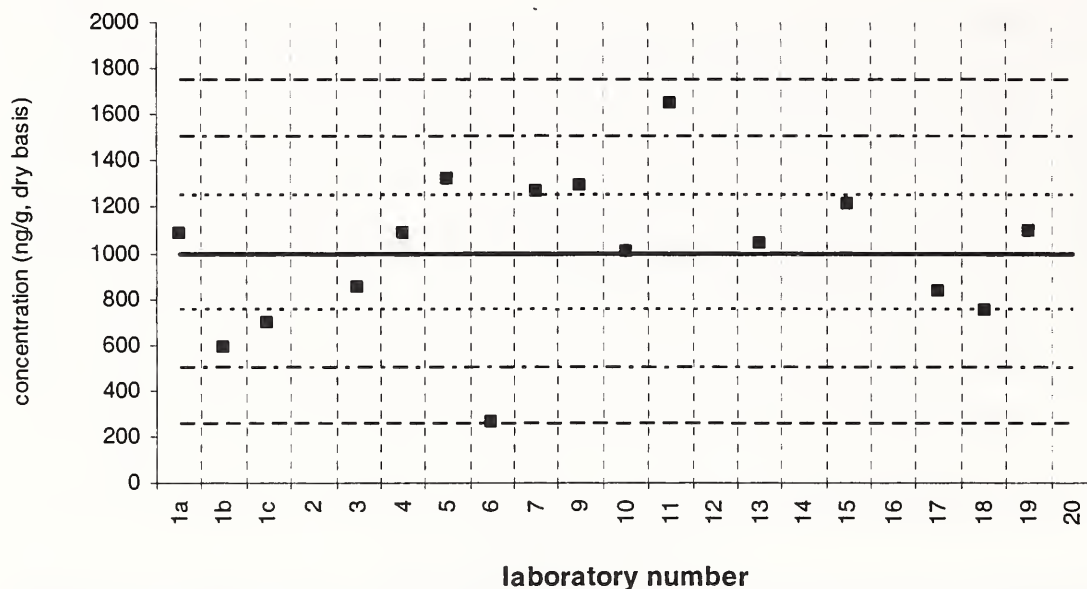
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

benzo[b]fluoranthene

Sediment XII (QA03SED12)

Assigned value = 999 ng/g $s = 358$ ng/g 95% CL = ± 207 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 16

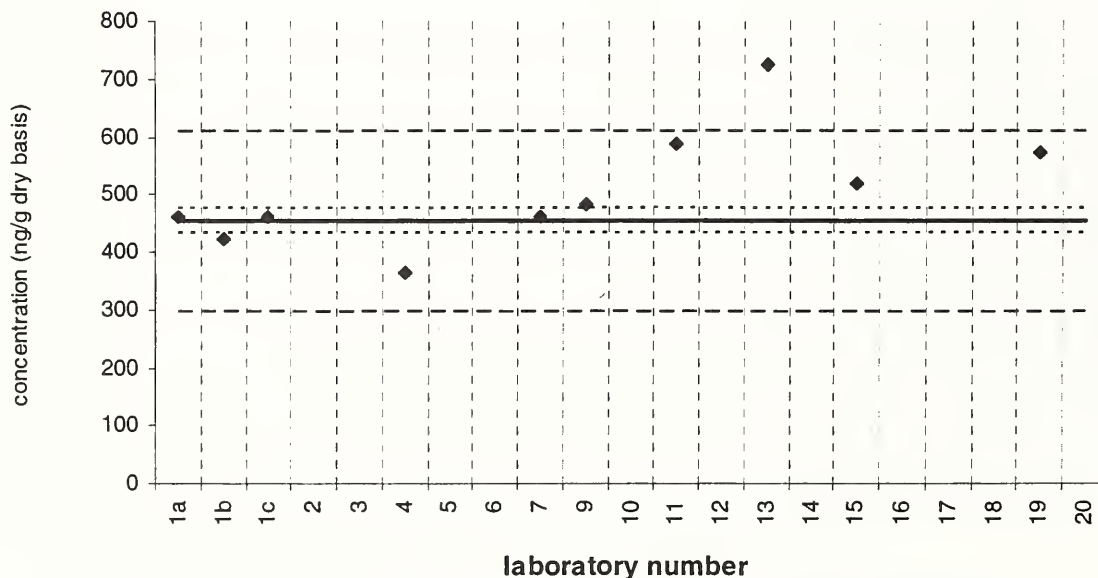


Solid line : exercise assigned value (EAV); dotted line: $z = \pm 1$ (25% from EAV); dotted/dashed line: $z = \pm 2$ (50% from EAV); dashed line: $z = \pm 3$ (75% from EAV)

benzo[b]fluoranthene

SRM 1941b

Certified Value = 453 ± 21 ng/g (dry basis)
Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

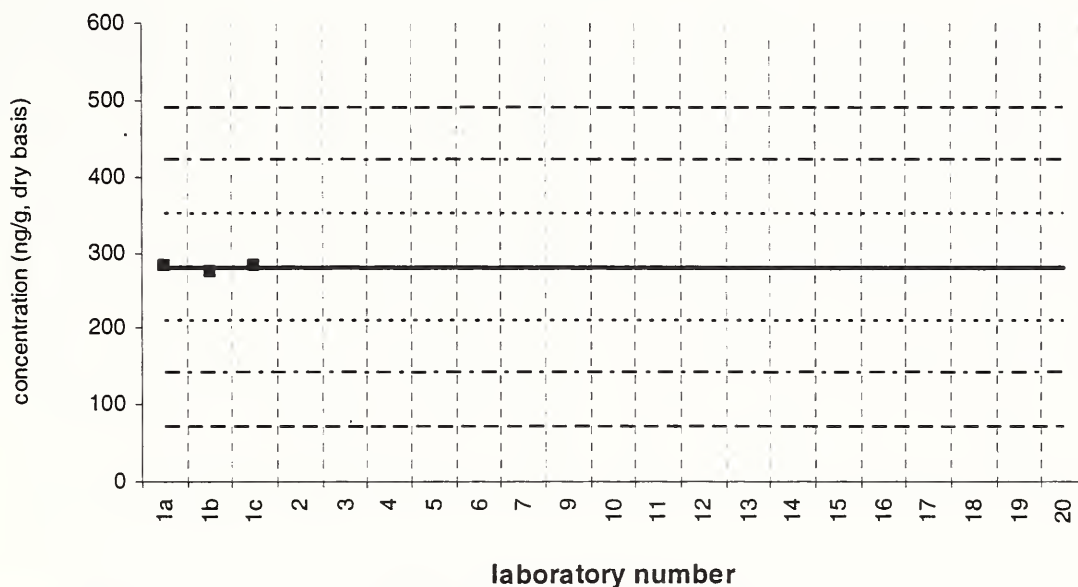
Lab 10 –
2949 ng/g

benzo[j]fluoranthene

Sediment XII (QA03SED12)

Assigned value = 280 ng/g $s = 4$ ng/g 95% CL = 11 ng/g (dry basis)

Reported Results: 3 Quantitative Results: 3

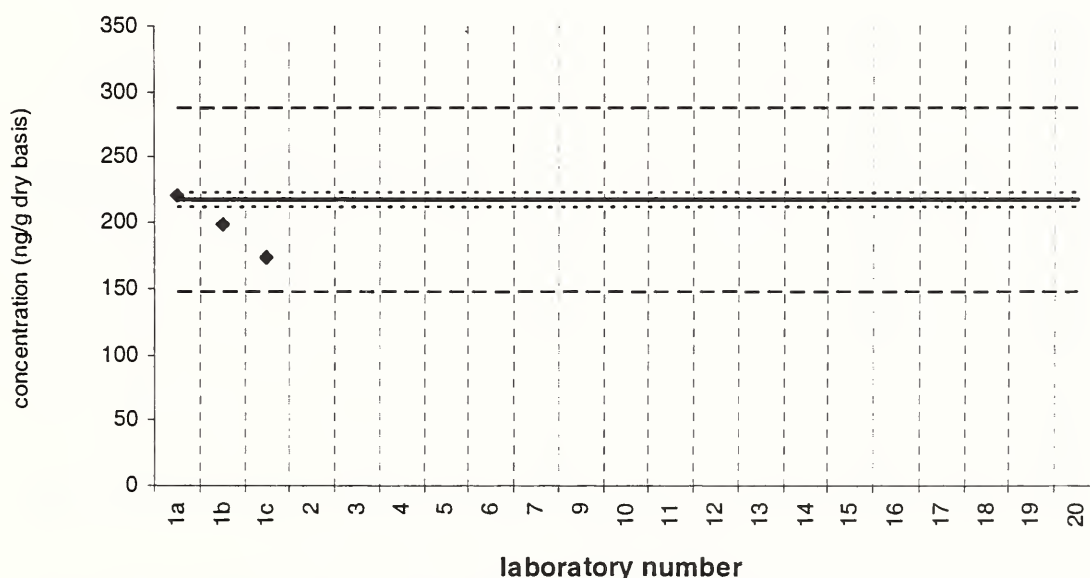


Solid line : exercise assigned value (EAV); dotted line: $z = \pm 1$ (25% from EAV); dotted/dashed line: $z = \pm 2$ (50% from EAV); dashed line: $z = \pm 3$ (75% from EAV)

benzo[j]fluoranthene

SRM 1941b

Reference Value = 217 ± 5 ng/g (dry basis)
Reported Results: 3 Quantitative Results: 3



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

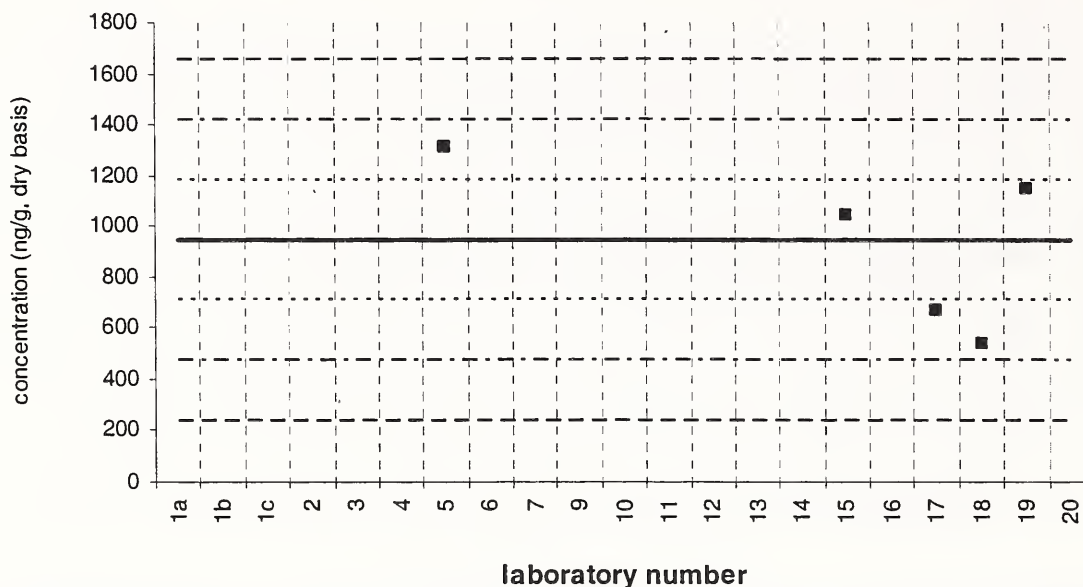
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

benzo[j]+[k]fluoranthene

Sediment XII (QA03SED12)

Assigned value = 943 ng/g s = 327 ng/g 95% CL = 406 ng/g (dry basis)

Reported Results: 5 Quantitative Results: 5



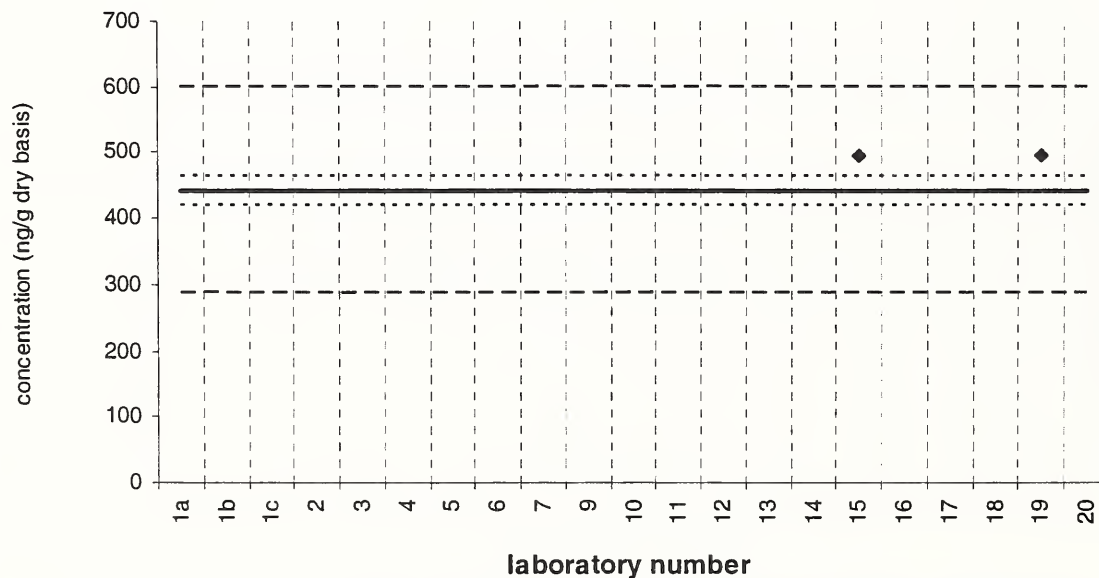
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

benzo[j]+[k]fluoranthene

SRM 1941b

Target Value = 442 \pm 23 ng/g (dry basis)

Reported Results: 5 Quantitative Results: 5



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

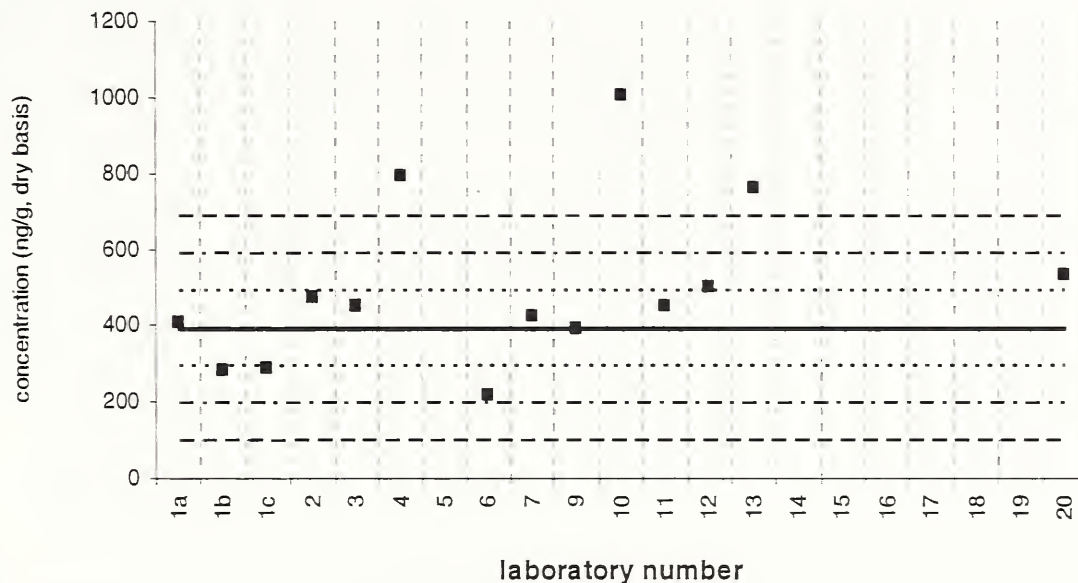
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

benzo[k]fluoranthene

Sediment XII (QA03SED12)

Assigned value = 392 ng/g s = 98 ng/g 95% CL = 70 ng/g (dry basis)

Reported Results: 14 Quantitative Results: 14



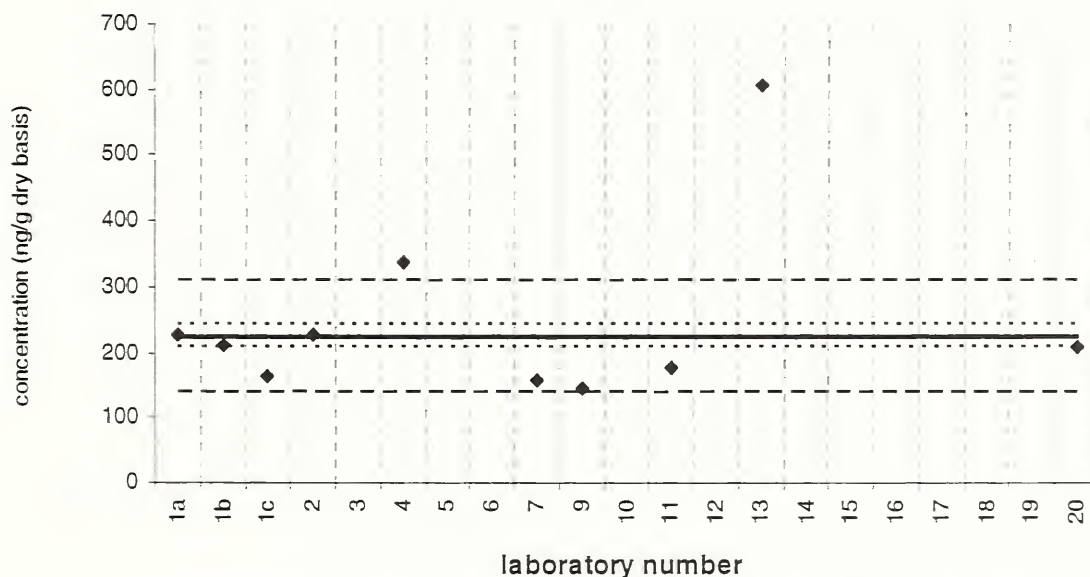
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

benzo[k]fluoranthene

SRM 1941b

Certified Value = 225 ± 18 ng/g (dry basis)

Reported Results: 12 Quantitative Results: 12



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

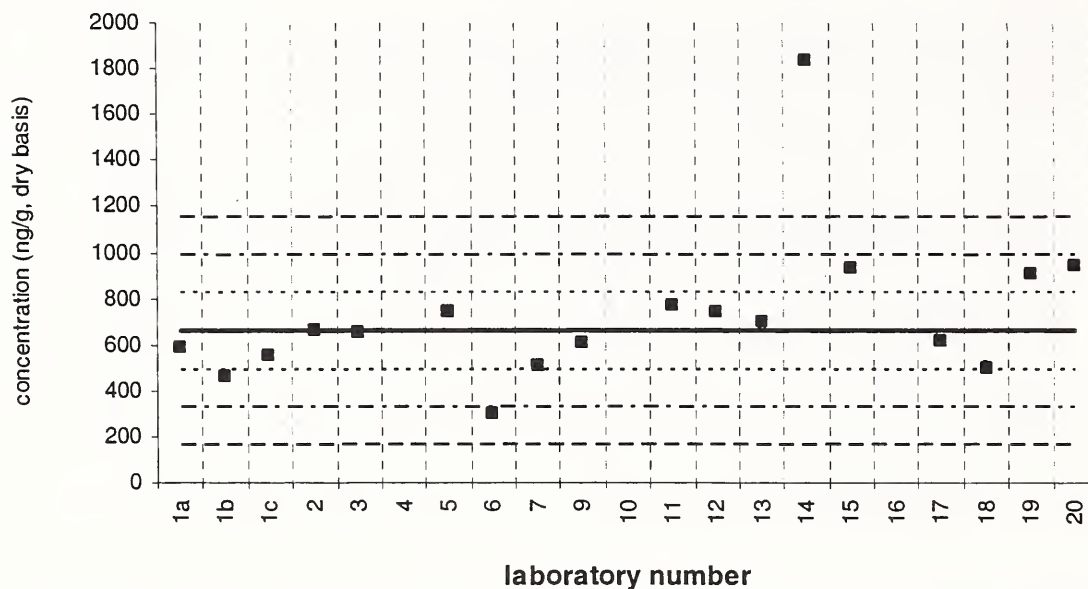
Lab 10 –
3358 ng/g

benzo[e]pyrene

Sediment XII (QA03SED12)

Assigned value = 657 ng/g $s = 186$ ng/g 95% CL = 107 ng/g (dry basis)

Reported Results: 18 Quantitative Results: 18



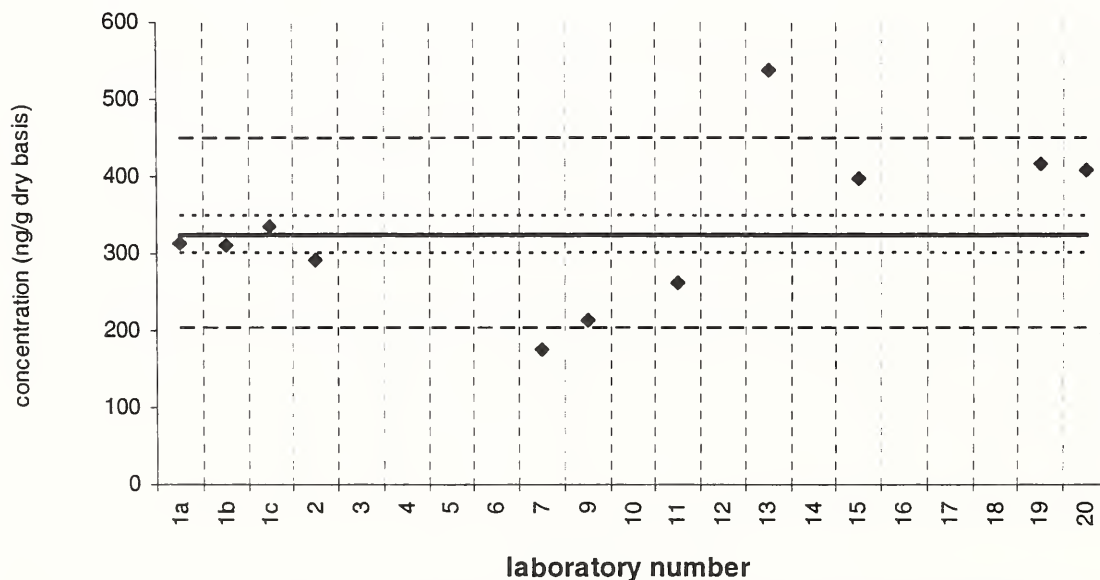
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

benzo[e]pyrene

SRM 1941b

Certified Value = 325 ± 25 ng/g (dry basis)

Reported Results: 15 Quantitative Results: 15

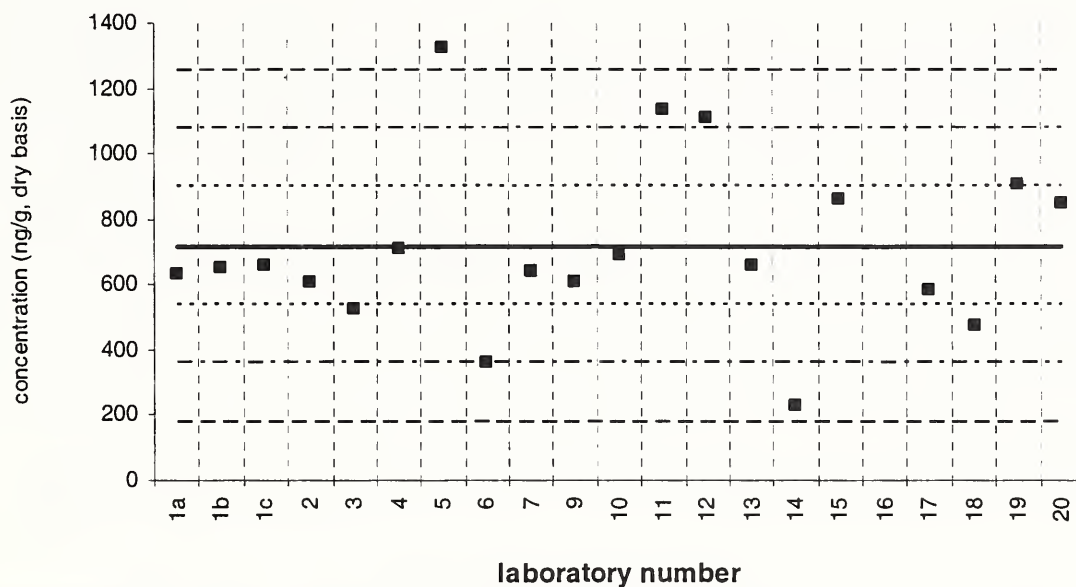


Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

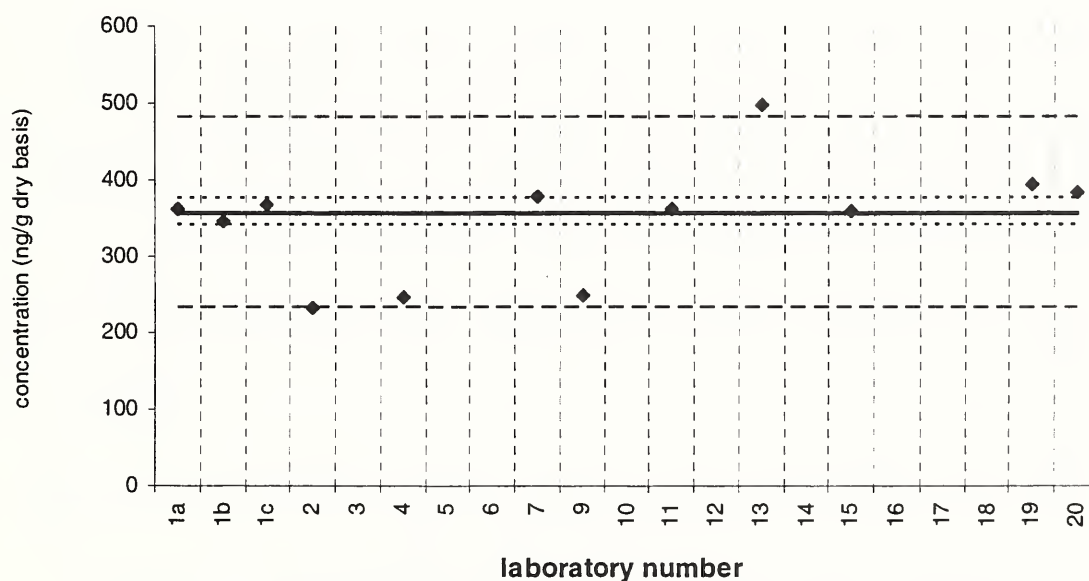
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

benzo[a]pyrene**Sediment XII (QA03SED12)**Assigned value = 718 ng/g $s = 238$ ng/g 95% CL = 123 ng/g (dry basis)

Reported Results: 20 Quantitative Results: 20



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

benzo[a]pyrene**SRM 1941b**Certified Value = 358 ± 17 ng/g (dry basis)
Reported Results: 17 Quantitative Results: 17

Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

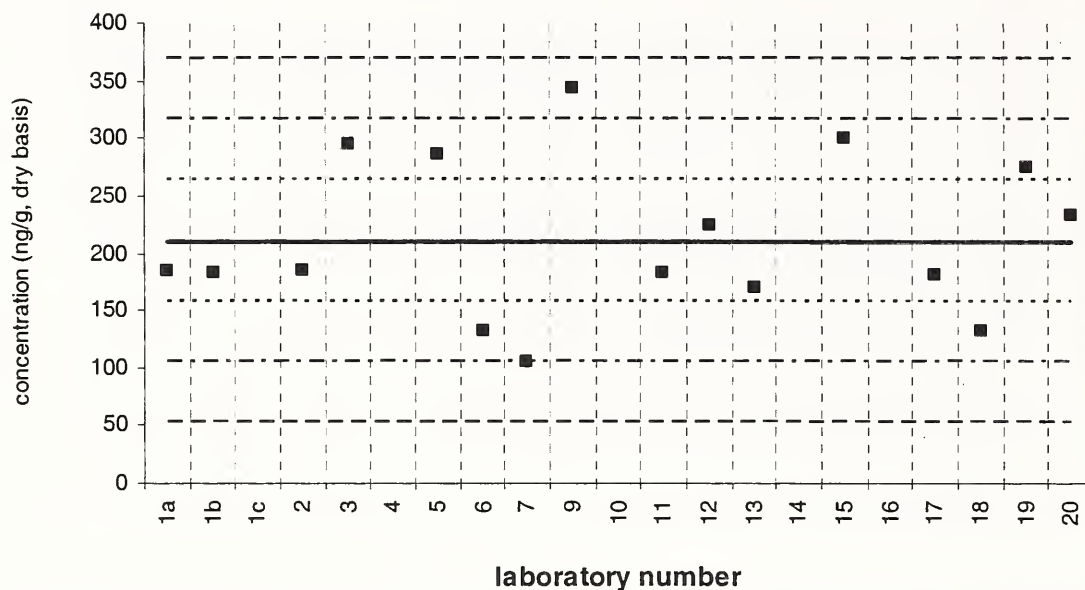
Lab 10 –
2795 ng/g

perylene

Sediment XII (QA03SED12)

Assigned value = 211 ng/g $s = 60$ ng/g 95% CL = 36 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 17



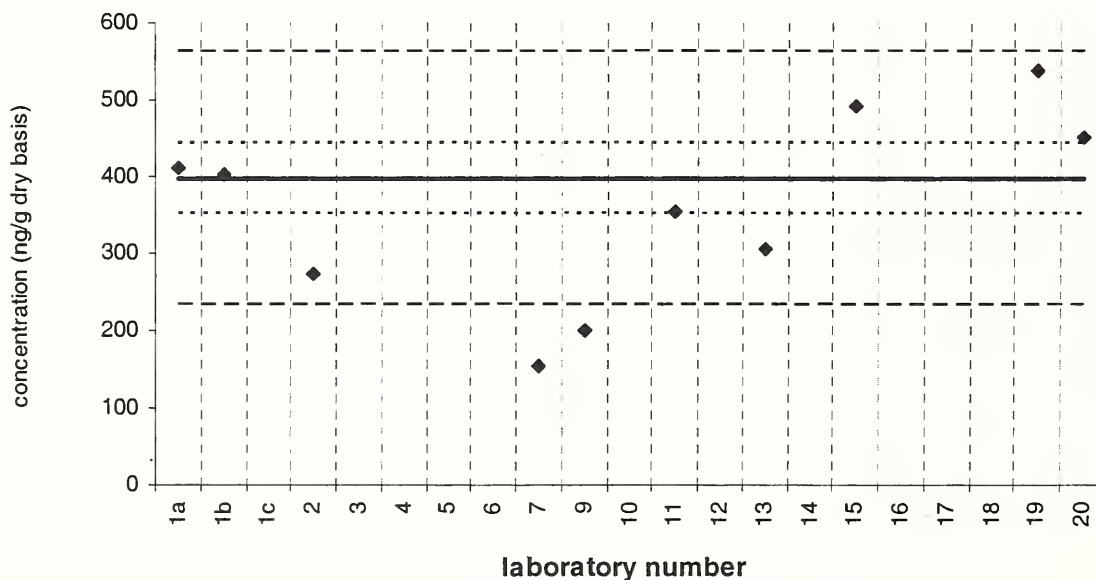
Solid line : exercise assigned value (EAV); dotted line: $z = \pm 1$ (25% from EAV); dotted/dashed line: $z = \pm 2$ (50% from EAV); dashed line: $z = \pm 3$ (75% from EAV)

Lab 14 –
2067 ng/g

perylene

SRM 1941b

Certified Value = 397 ± 45 ng/g (dry basis)
Reported Results: 14 Quantitative Results: 14

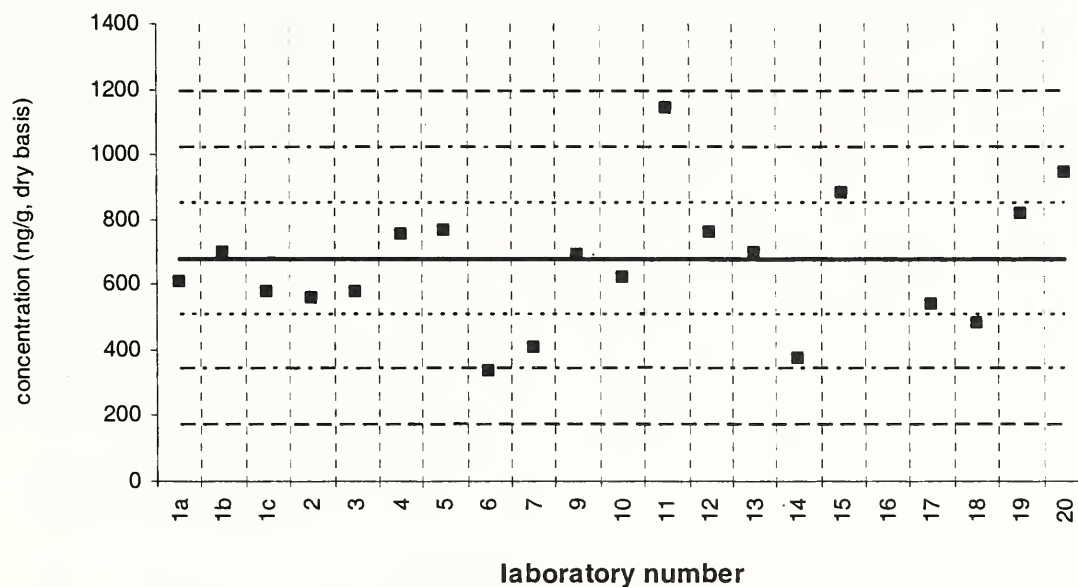


Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

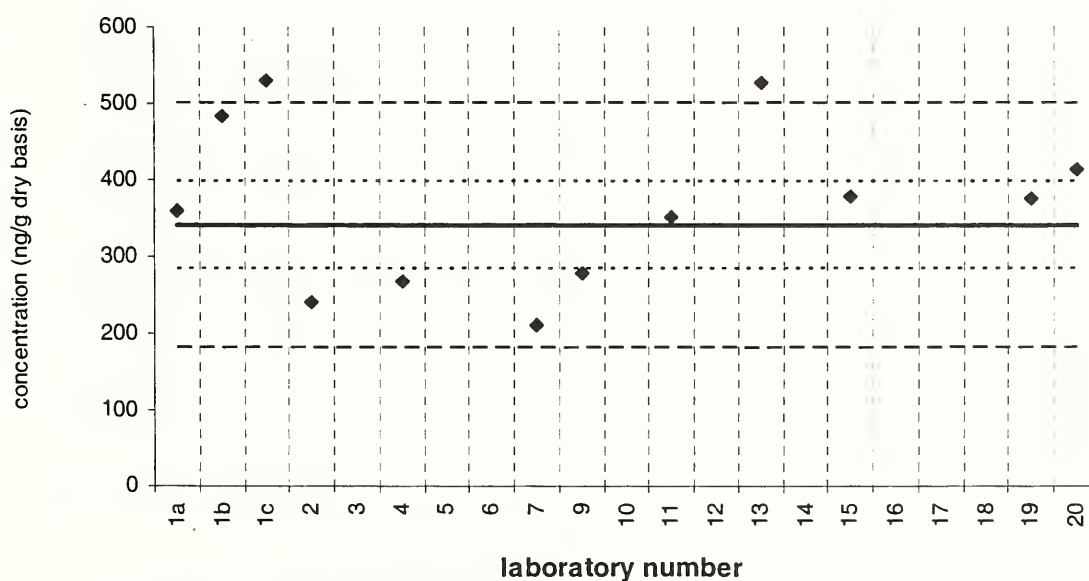
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

indeno[1,2,3-cd]pyrene**Sediment XII (QA03SED12)**Assigned value = 680 ng/g $s = 214$ ng/g 95% CL = 118 ng/g (dry basis)

Reported Results: 20 Quantitative Results: 20



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

indeno[1,2,3-cd]pyrene**SRM 1941b**Certified Value = 341 ± 57 ng/g (dry basis)
Reported Results: 17 Quantitative Results: 17

Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

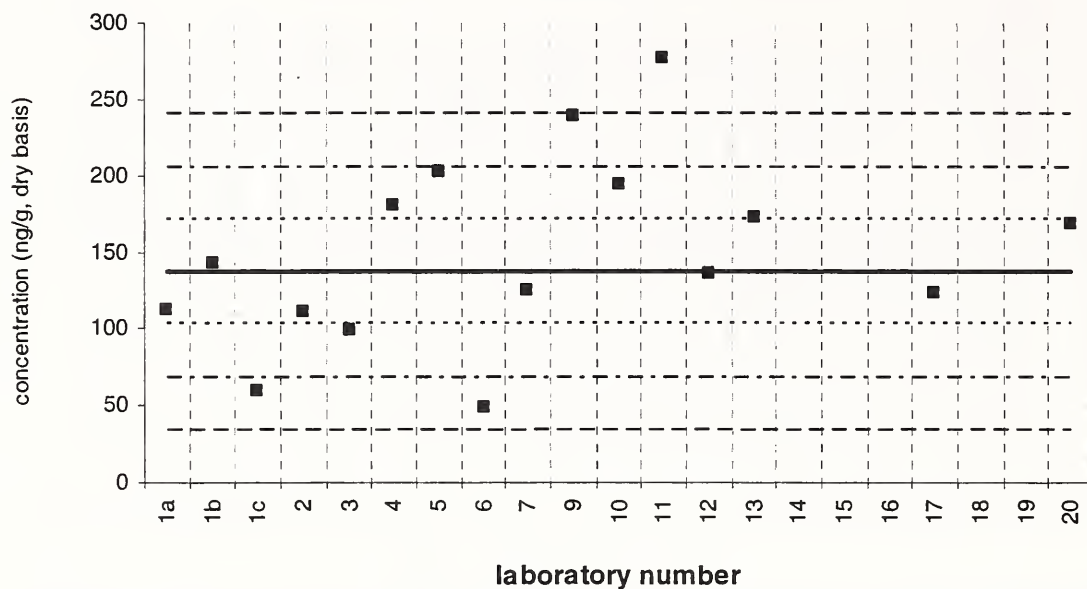
Lab 10 –
1875 ng/g

dibenz[a,h]anthracene

Sediment XII (QA03SED12)

Assigned value = 137 ng/g $s = 66$ ng/g 95% CL = 44 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 16



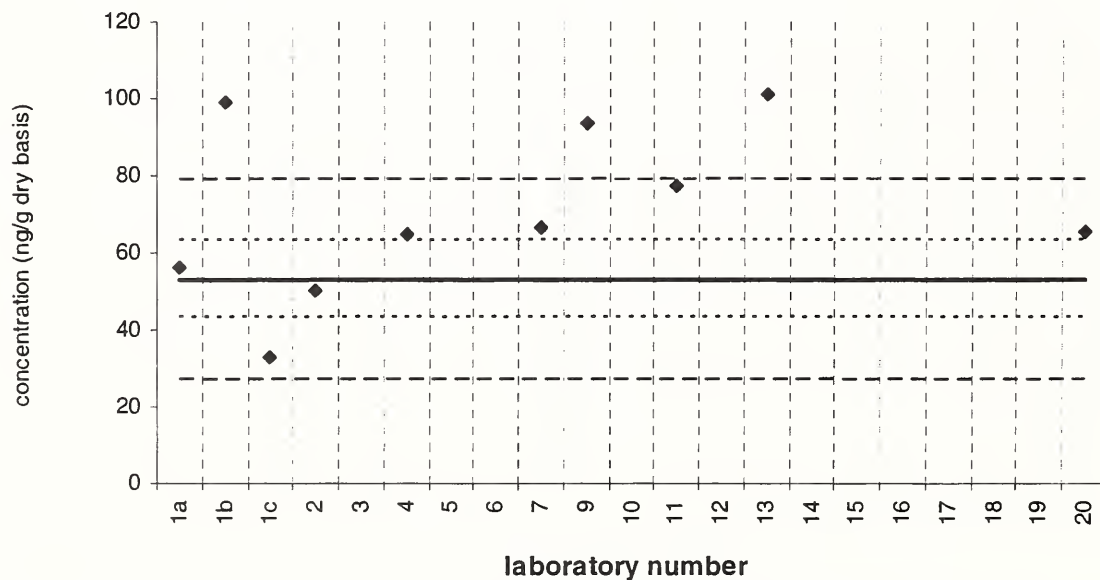
Solid line : exercise assigned value (EAV); dotted line: $z = \pm 1$ (25% from EAV); dotted/dashed line: $z = \pm 2$ (50% from EAV); dashed line: $z = \pm 3$ (75% from EAV)

dibenz[a,h]anthracene

SRM 1941b

Certified Value = 53 ± 10 ng/g (dry basis)

Reported Results: 14 Quantitative Results: 14



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

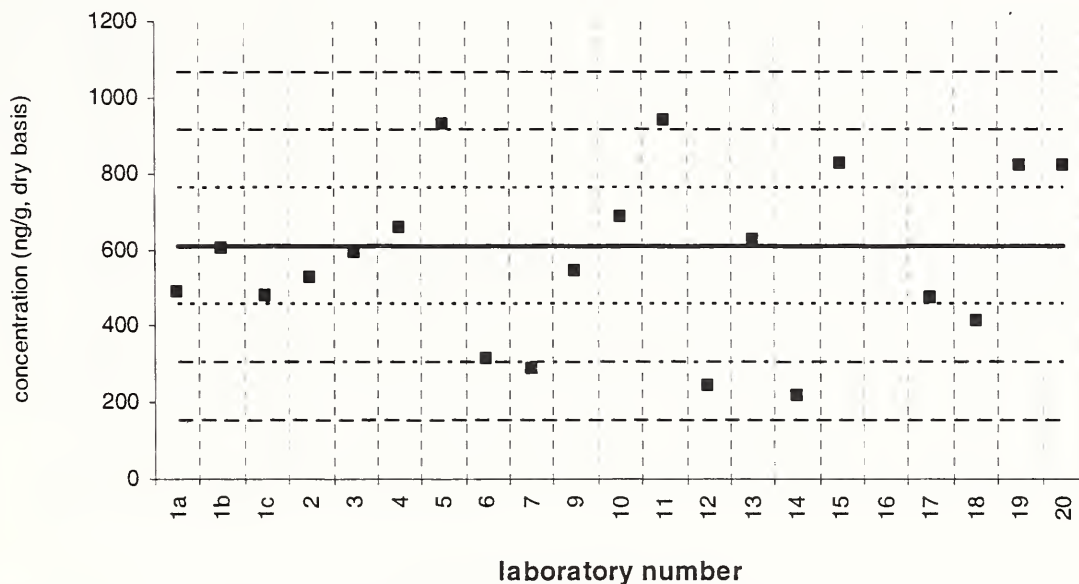
Lab 10 –
713 ng/g

benzo[ghi]perylene

Sediment XII (QA03SED12)

Assigned value = 608 ng/g $s = 200$ ng/g 95% CL = 103 ng/g (dry basis)

Reported Results: 20 Quantitative Results: 20

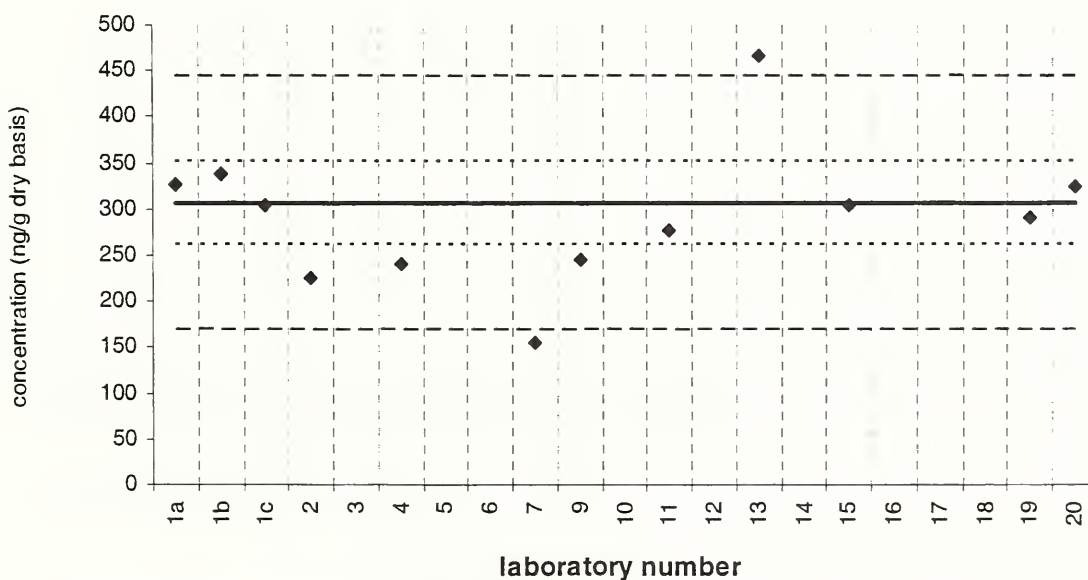


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

benzo[ghi]perylene

SRM 1941b

Certified Value = 307 ± 45 ng/g (dry basis)
Reported Results: 17 Quantitative Results: 17



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

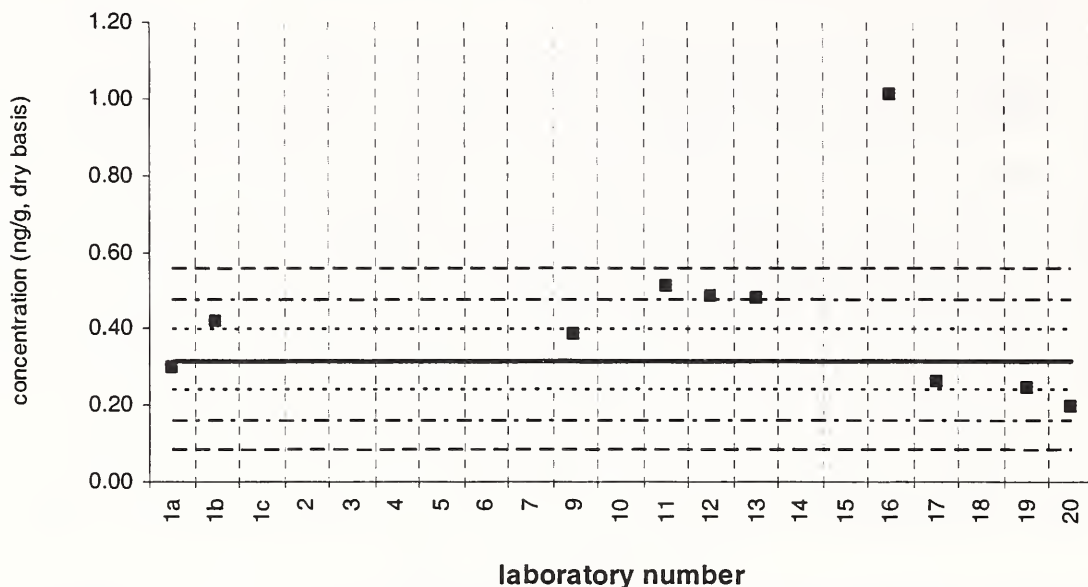
Lab 10 –
2205 ng/g

hexachlorobenzene

Sediment XII (QA03SED12)

Assigned value = 0.315 ng/g $s = 0.123$ ng/g 95% CL = 0.153 ng/g (dry basis)

Reported Results: 15 Quantitative Results: 11



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

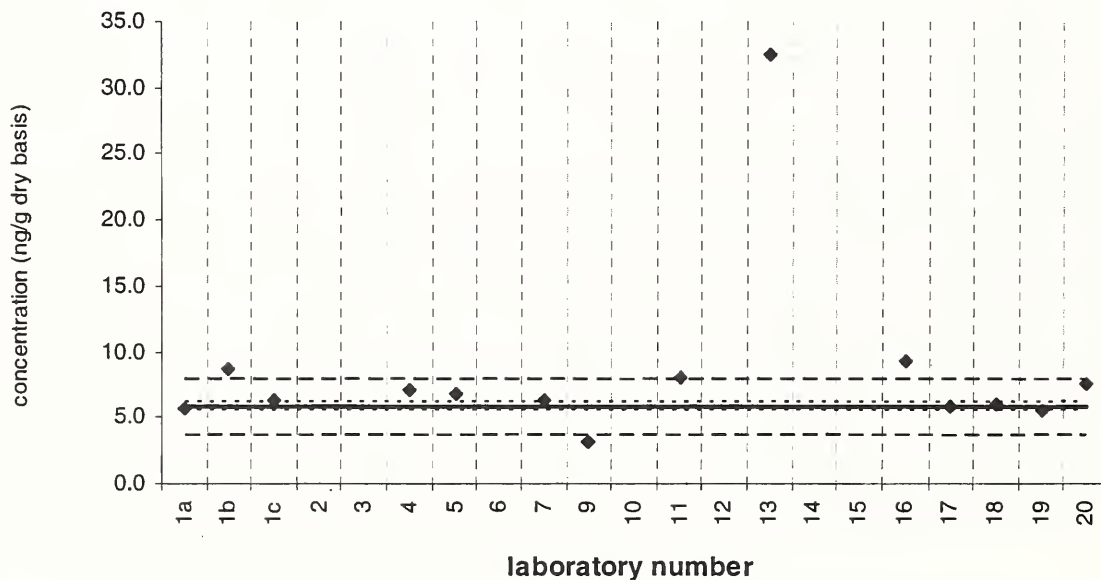
Lab 4 –
7.20 ng/g

hexachlorobenzene

SRM 1941b

Certified Value = 5.83 ± 0.38 ng/g (dry basis)

Reported Results: 14 Quantitative Results: 14

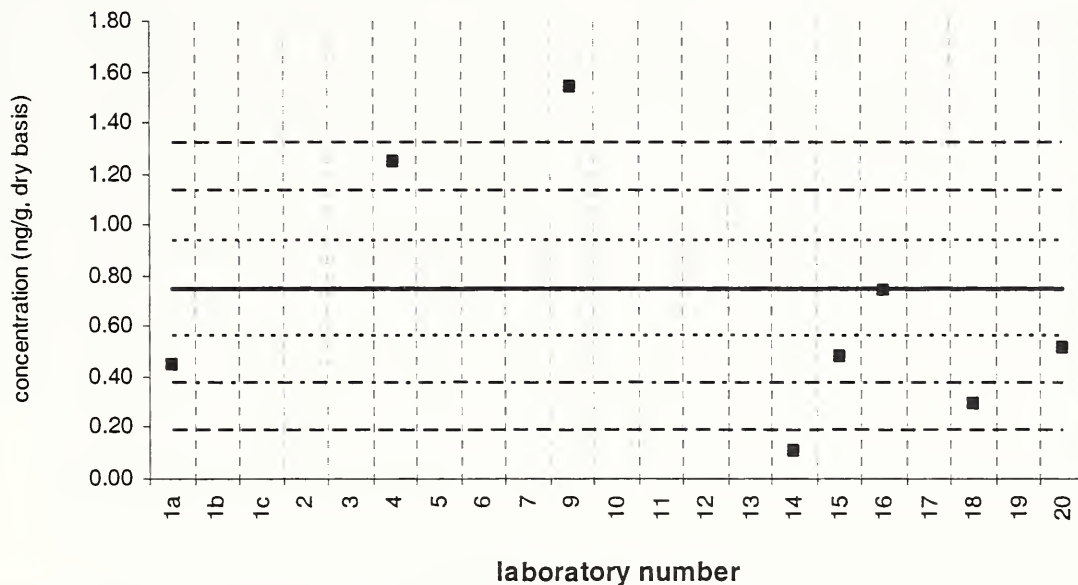


Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

gamma-chlordane**Sediment XII (QA03SED12)**Assigned value = 0.753 ng/g $s = 0.466$ ng/g 95% CL = 0.431 ng/g (dry basis)

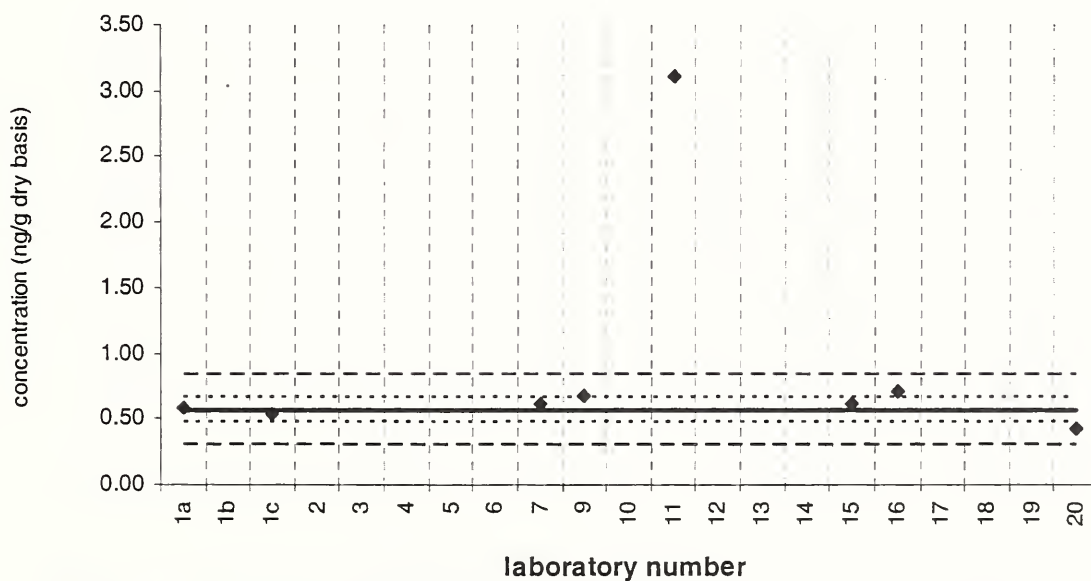
Reported Results: 14 Quantitative Results: 8



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

gamma-chlordane**SRM 1941b**Certified Value = 0.57 ± 0.09 ng/g (dry basis)

Reported Results: 13 Quantitative Results: 11

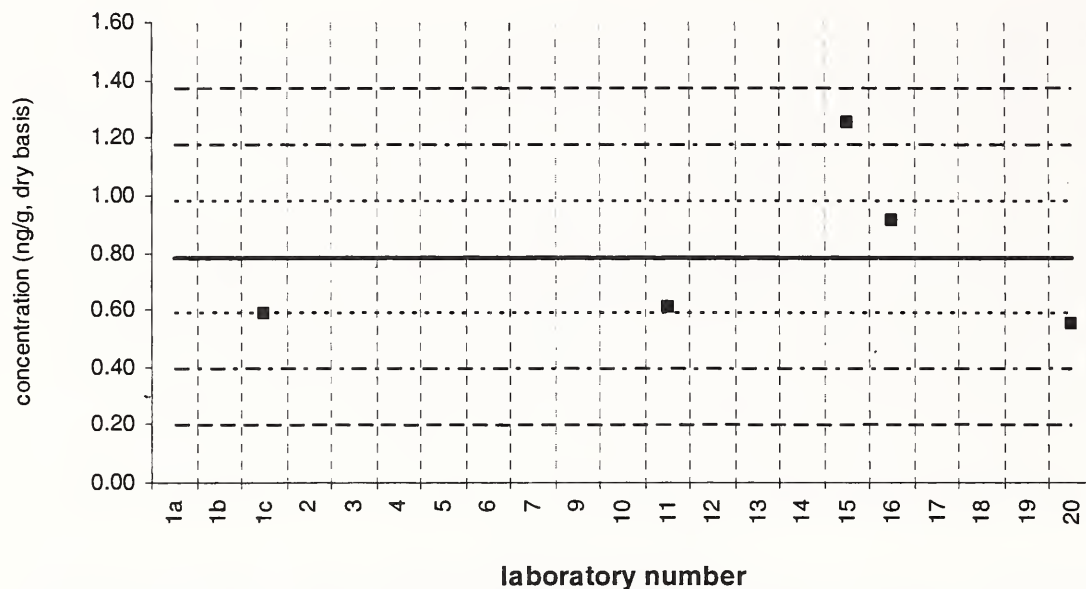


Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

2,4'-DDE**Sediment XII (QA03SED12)**Assigned value = 0.782 ng/g $s = 0.299$ ng/g 95% CL = 0.371 ng/g (dry basis)

Reported Results: 15 Quantitative Results: 7

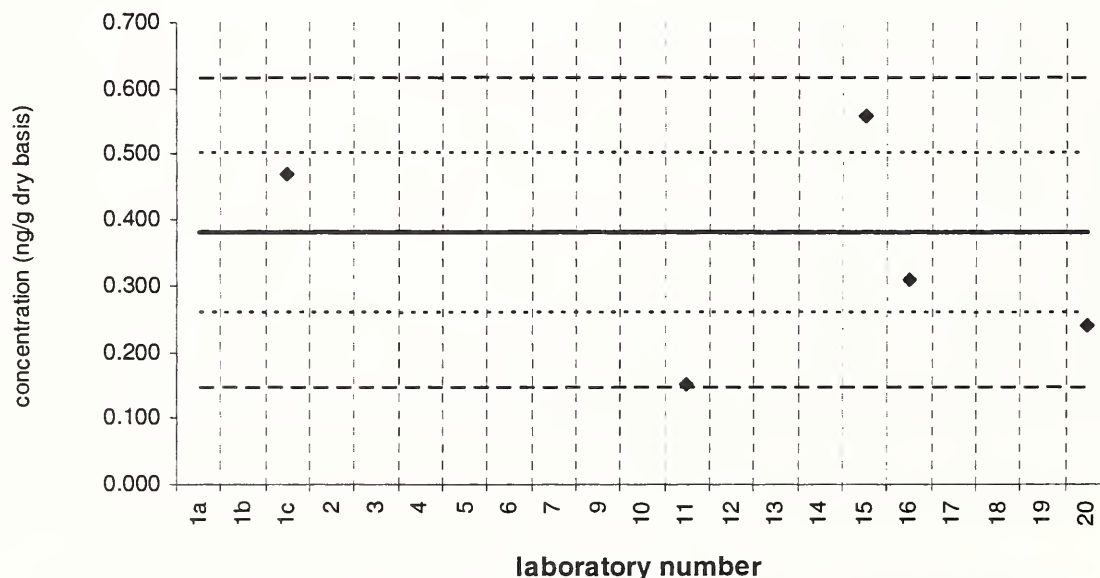


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

Lab 12 –
8.84 ng/g;
Lab 14 –
10.1 ng/g

2,4'-DDE**SRM 1941b**Reference Value = 0.38 ± 0.12 ng/g (dry basis)

Reported Results: 13 Quantitative Results: 8



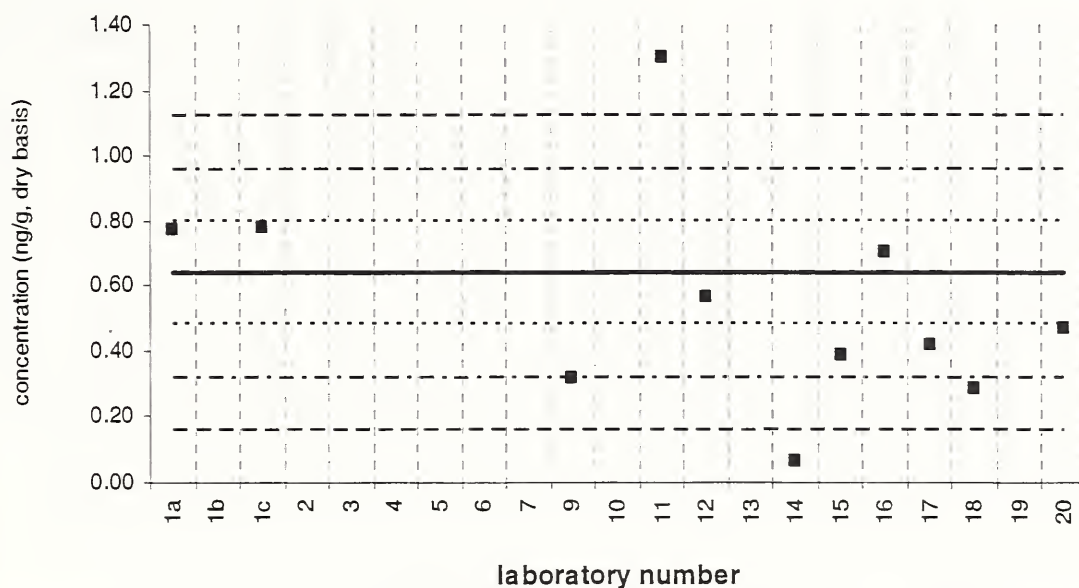
Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 13 –
8.10 ng/g

cis-chlordane (alpha-chlordane)**Sediment XII (QA03SED12)**Assigned value = 0.639 ng/g $s = 0.326$ ng/g 95% CL = 0.273 ng/g (dry basis)

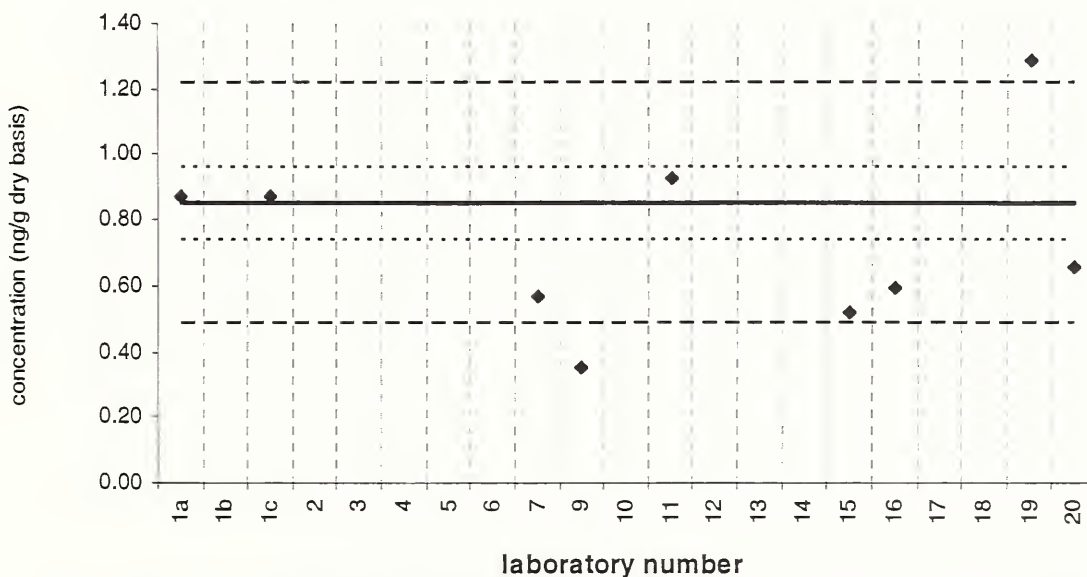
Reported Results: 17 Quantitative Results: 12



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

Lab 19 –
5.63 ng/g**cis-chlordane (alpha-chlordane)****SRM 1941b**Certified Value = 0.85 ± 0.11 ng/g (dry basis)

Reported Results: 15 Quantitative Results: 13



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

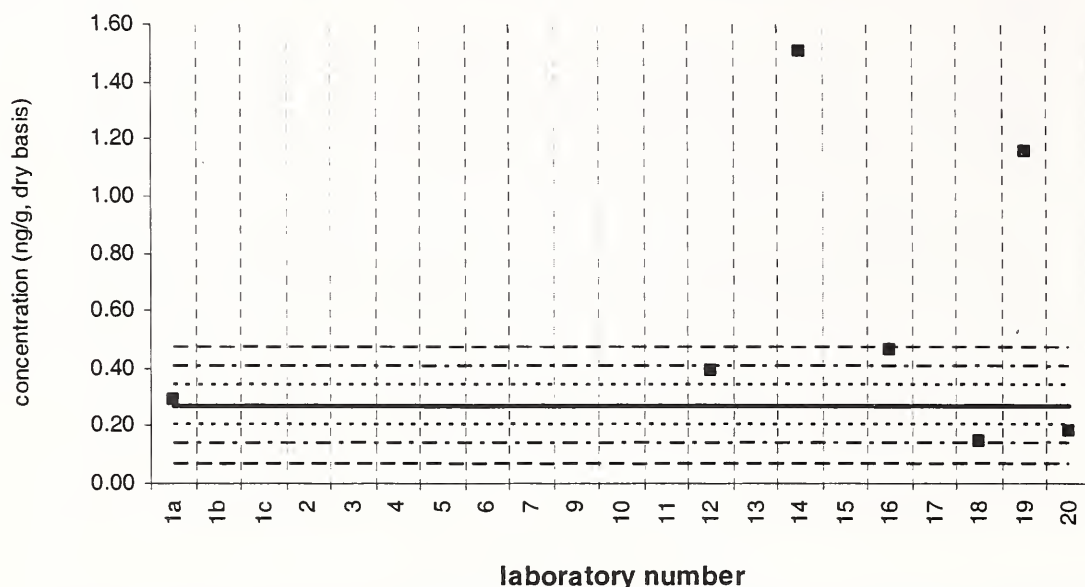
Lab 13 –
9.92 ng/g

trans-nonachlor

Sediment XII (QA03SED12)

Assigned value = 0.271 ng/g s = 0.144 ng/g 95% CL = 0.229 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 7

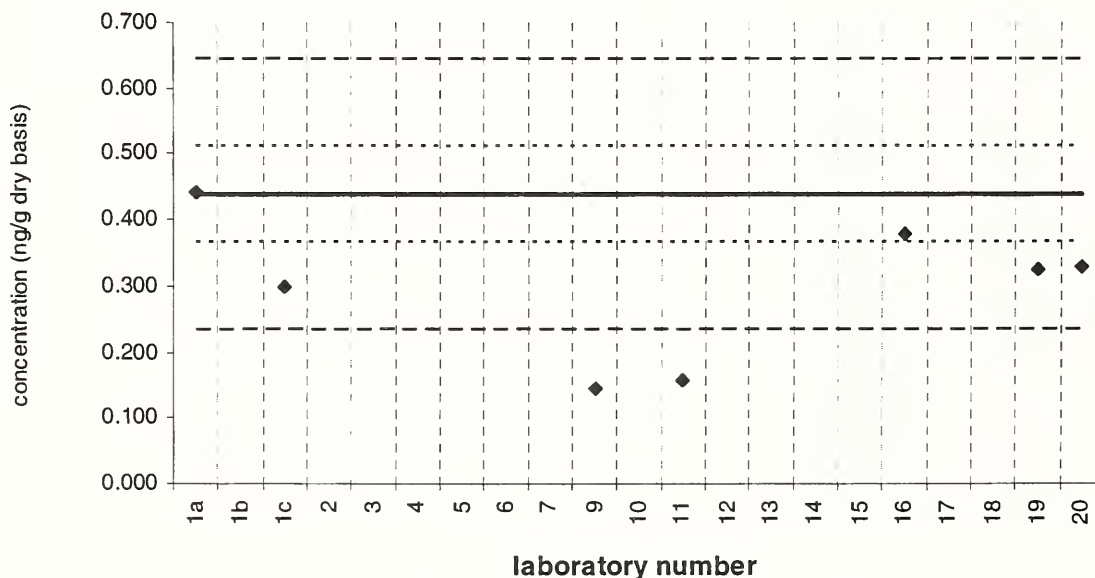


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

trans-nonachlor

SRM 1941b

Certified Value = 0.438 ± 0.073 ng/g (dry basis)
Reported Results: 15 Quantitative Results: 11



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

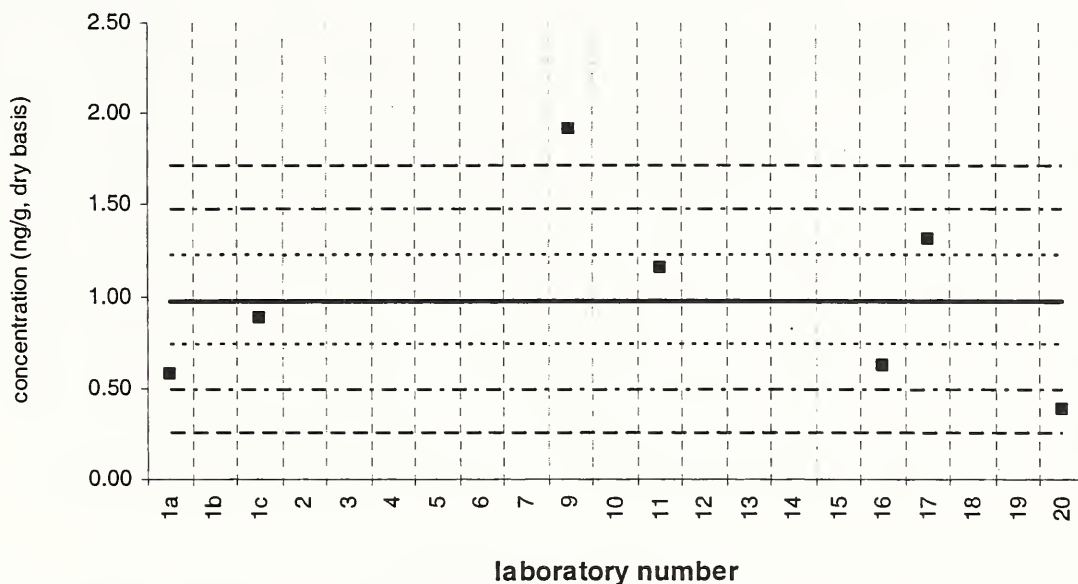
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 13 -
5.39 ng/g

dieldrin**Sediment XII (QA03SED12)**

Assigned value = 0.978 ng/g $s = 0.523$ ng/g 95% CL = 0.484 ng/g (dry basis)

Reported Results: 14 Quantitative Results: 7

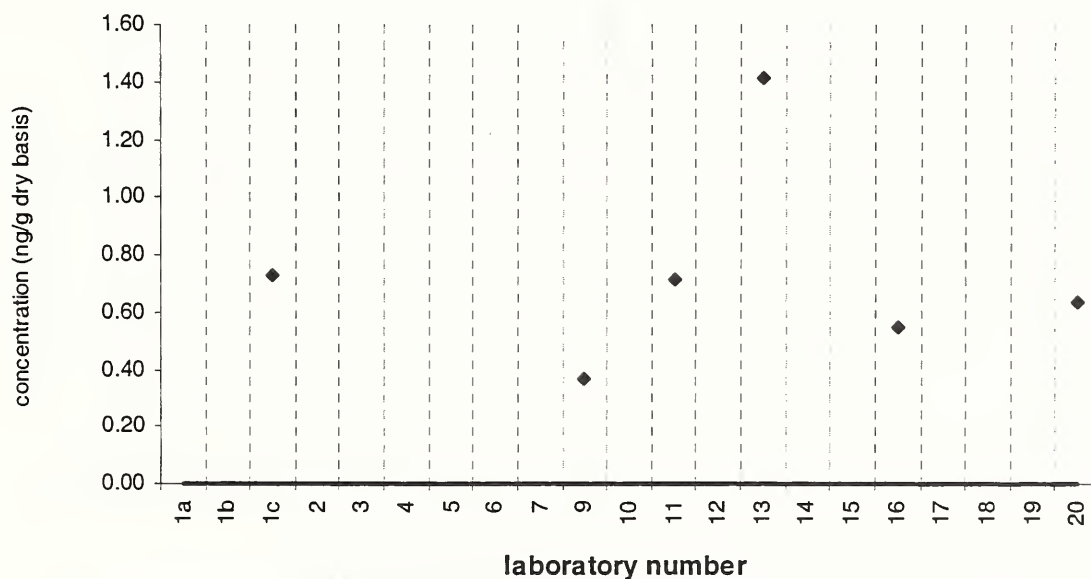


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

dieldrin**SRM 1941b**

Target Value = no target ng/g (dry basis)

Reported Results: 12 Quantitative Results: 7



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

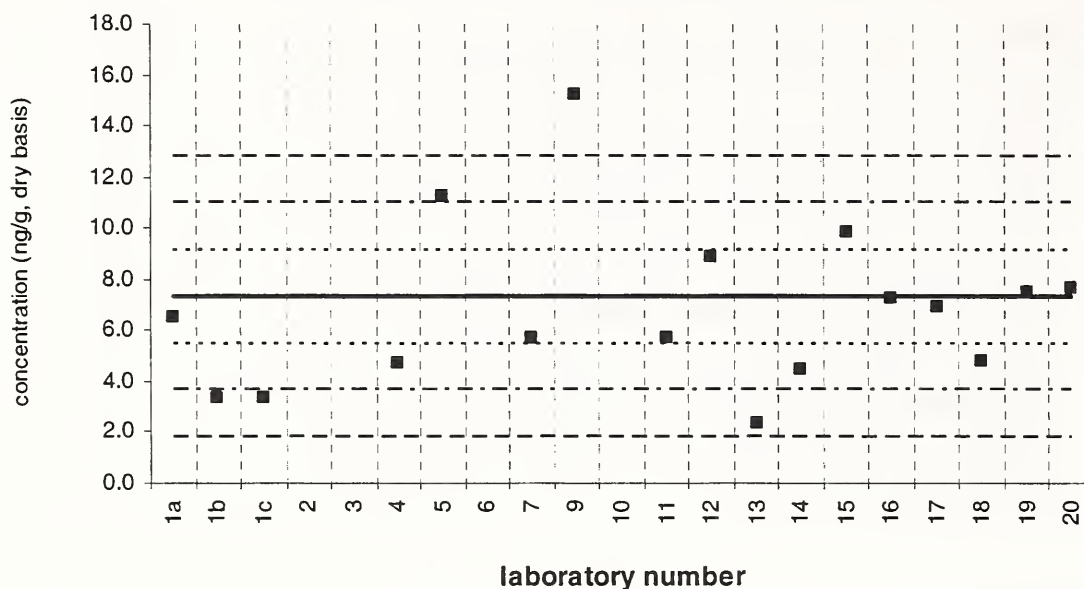
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

4,4'-DDE

Sediment XII (QA03SED12)

Assigned value = 7.30 ng/g $s = 3.28$ ng/g 95% CL = 1.98 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 17



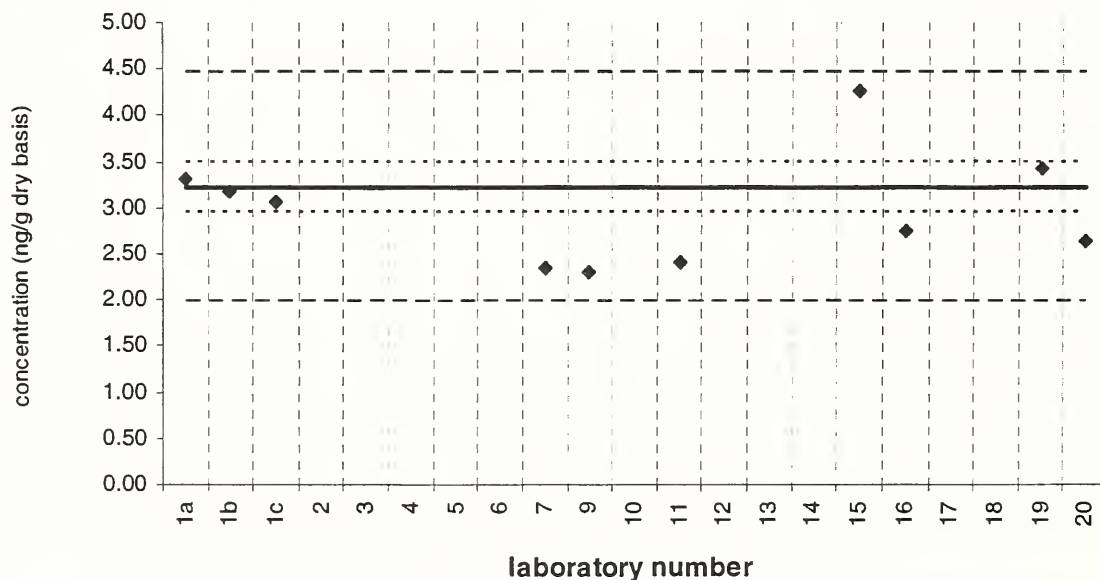
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

4,4'-DDE

SRM 1941b

Certified Value = 3.22 ± 0.28 ng/g (dry basis)

Reported Results: 14 Quantitative Results: 13



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

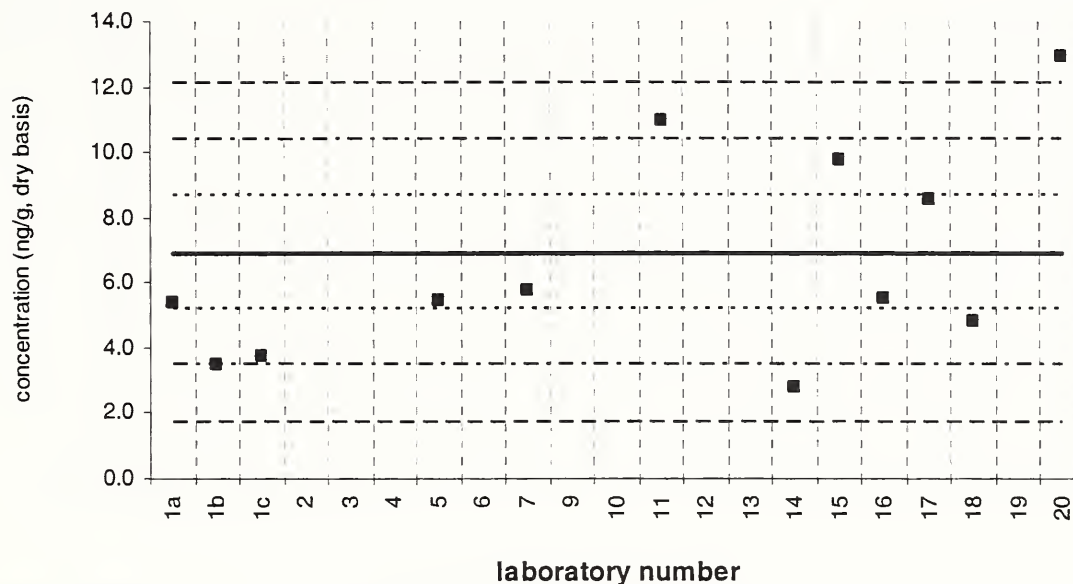
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 13 –
44.3 ng/g

2,4'-DDD**Sediment XII (QA03SED12)**

Assigned value = 6.93 ng/g $s = 3.12$ ng/g 95% CL = 2.10 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 12

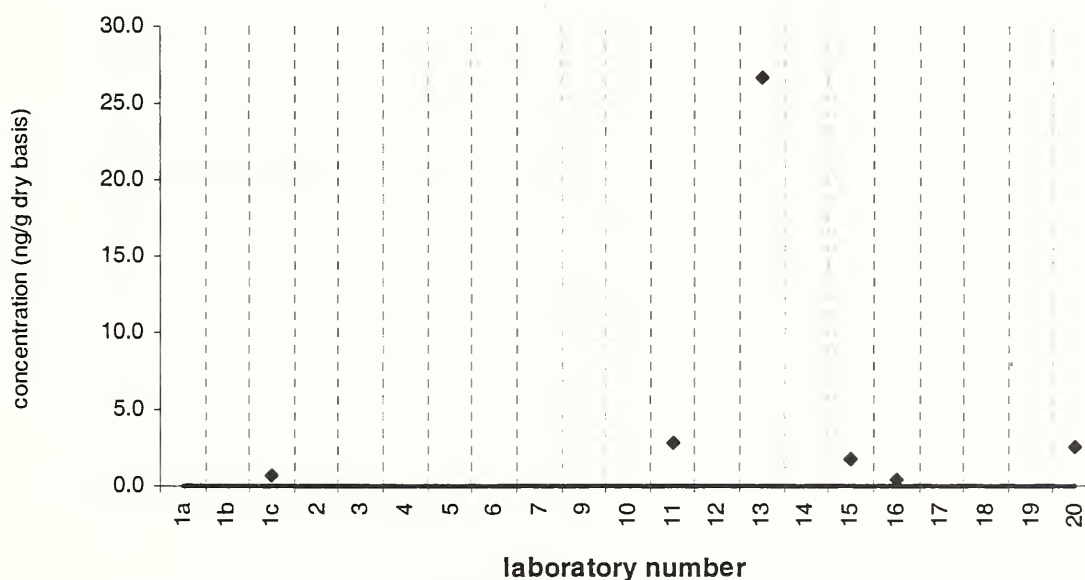


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

2,4'-DDD**SRM 1941b**

Target Value = no target ng/g (dry basis)

Reported Results: 13 Quantitative Results: 8



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

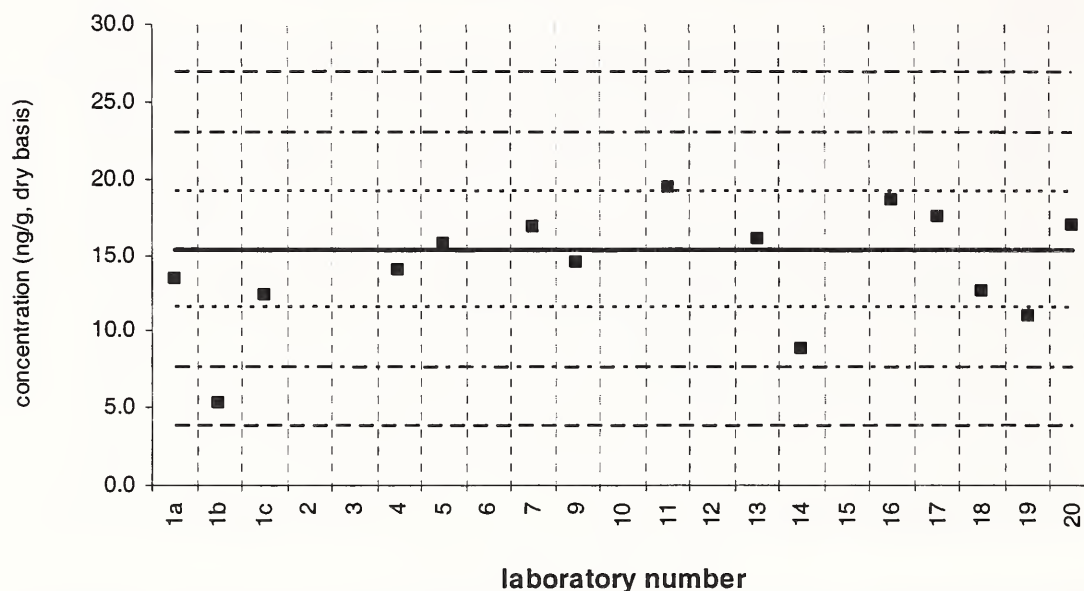
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

4,4'-DDD

Sediment XII (QA03SED12)

Assigned value = 15.3 ng/g $s = 2.8$ ng/g 95% CL = 1.9 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 15



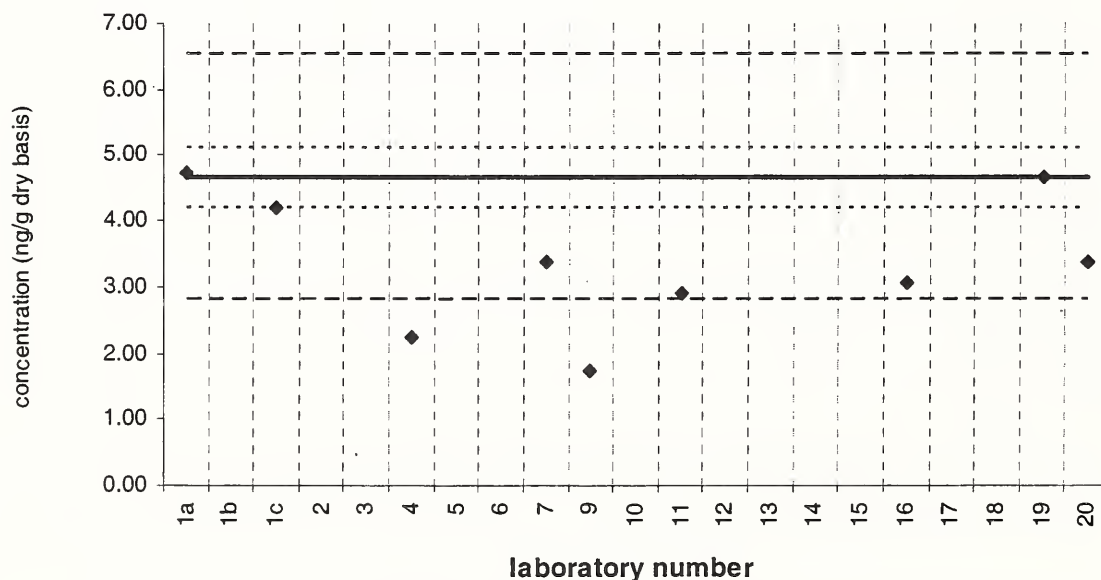
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

4,4'-DDD

SRM 1941b

Certified Value = 4.66 ± 0.46 ng/g (dry basis)

Reported Results: 13 Quantitative Results: 12



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

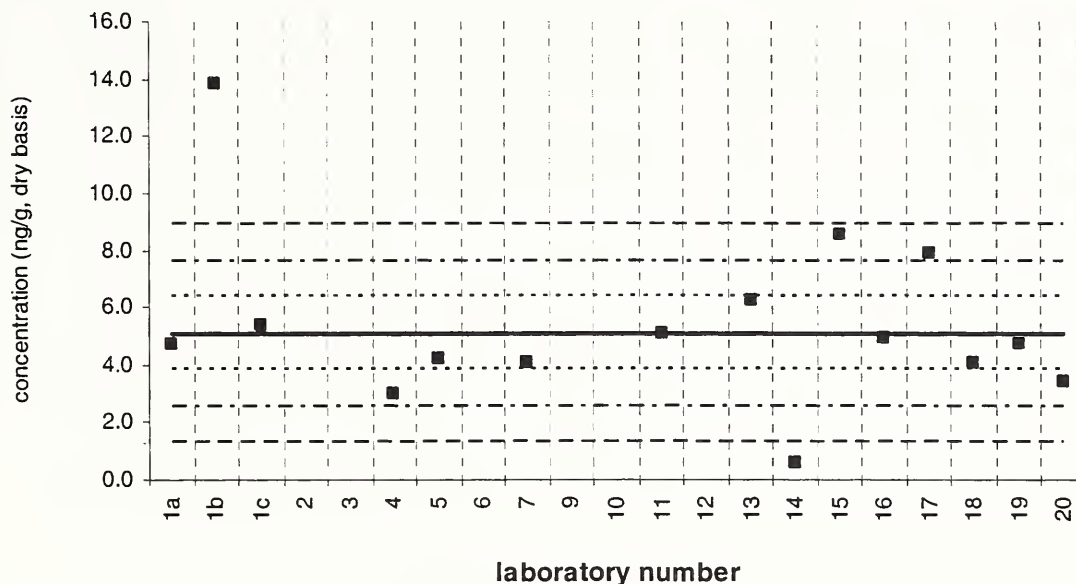
Lab 13 -
80.5 ng/g

2,4'-DDT

Sediment XII (QA03SED12)

Assigned value = 5.09 ng/g $s = 1.61$ ng/g 95% CL = 0.93 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 15



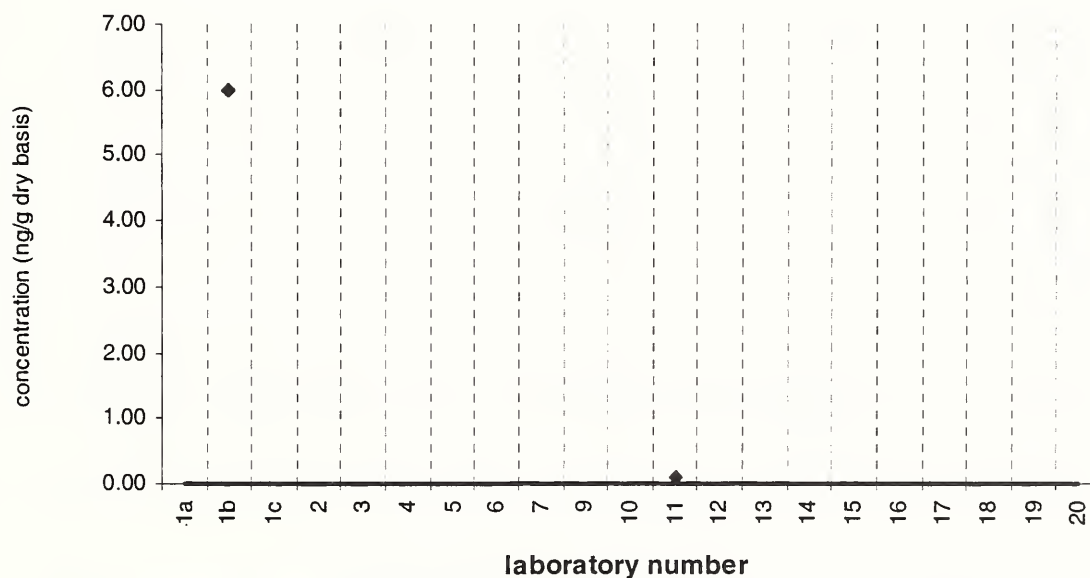
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

2,4'-DDT

SRM 1941b

Target Value = no target ng/g (dry basis)

Reported Results: 14 Quantitative Results: 3



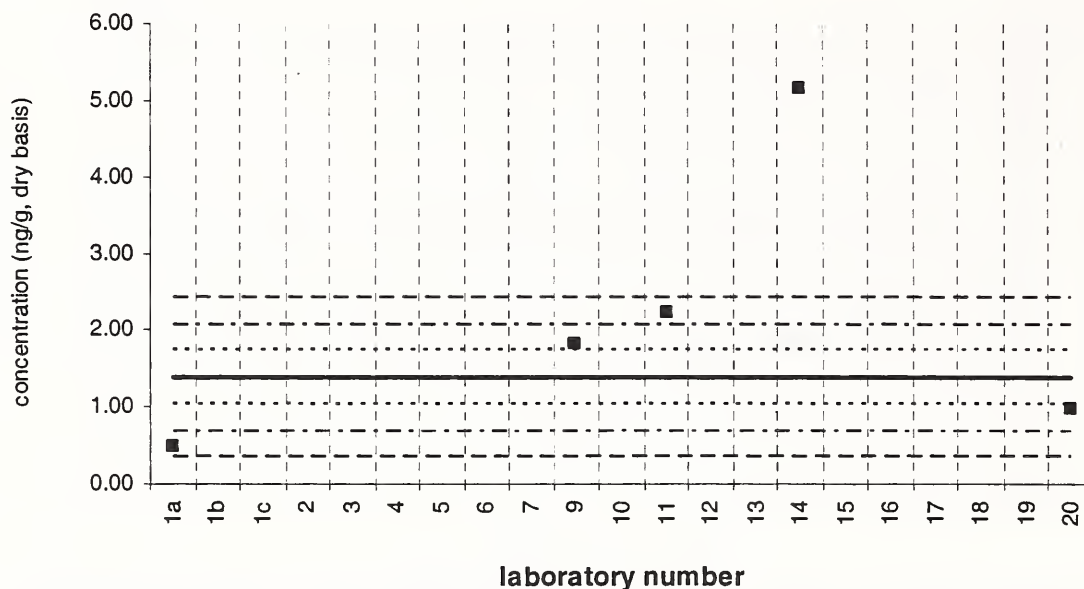
Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

cis-nonachlor**Sediment XII (QA03SED12)**

Assigned value = 1.38 ng/g $s = 0.79$ ng/g 95% CL = 1.25 ng/g (dry basis)

Reported Results: 14 Quantitative Results: 5

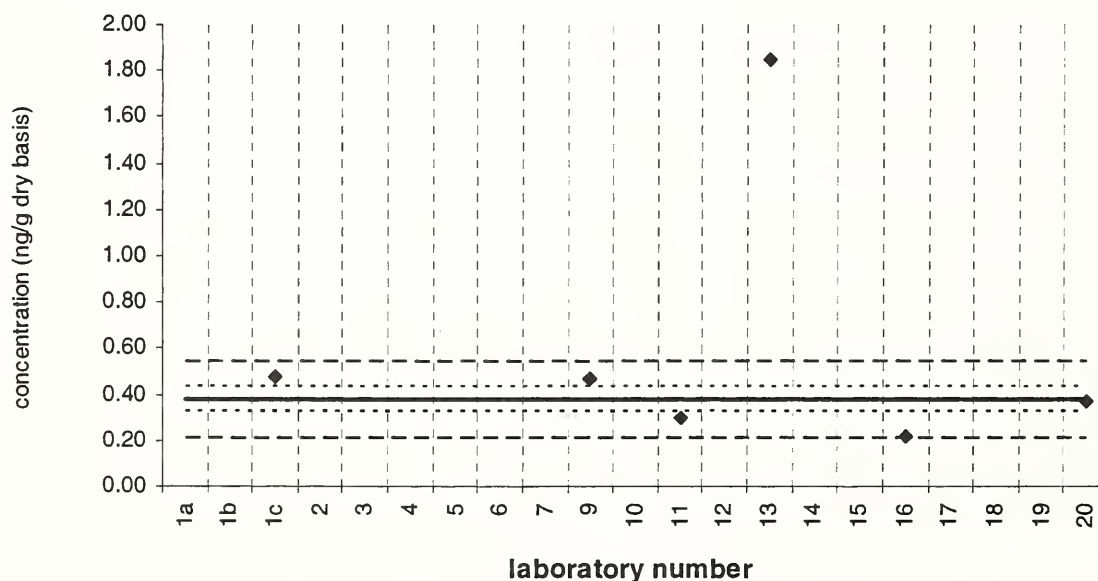


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

cis-nonachlor**SRM 1941b**

Certified Value = 0.378 ± 0.053 ng/g (dry basis)

Reported Results: 13 Quantitative Results: 8



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

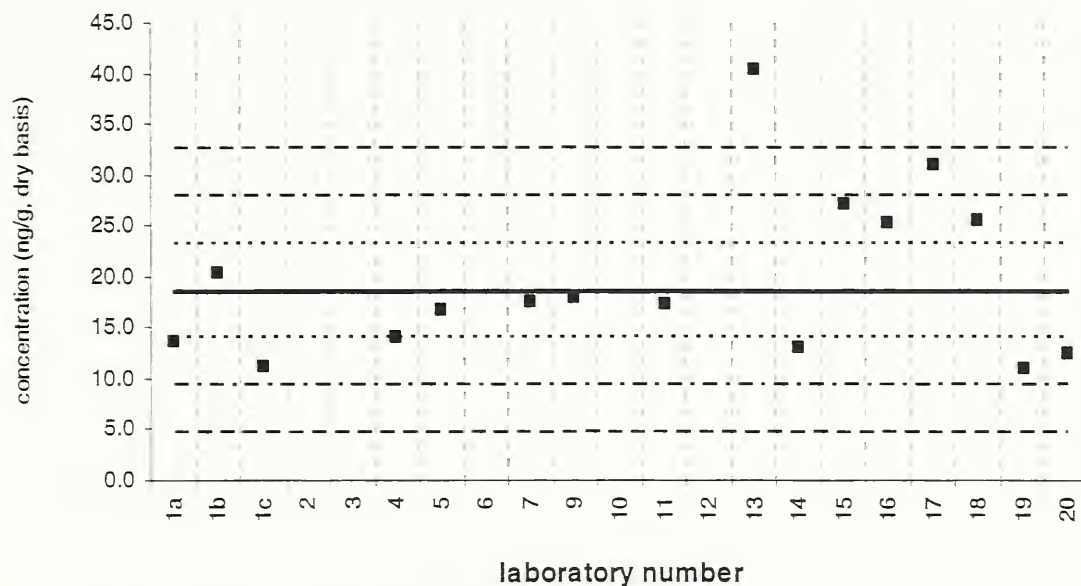
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

4,4'-DDT

Sediment XII (QA03SED12)

Assigned value = 18.6 ng/g $s = 6.3$ ng/g 95% CL = 3.7 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 16

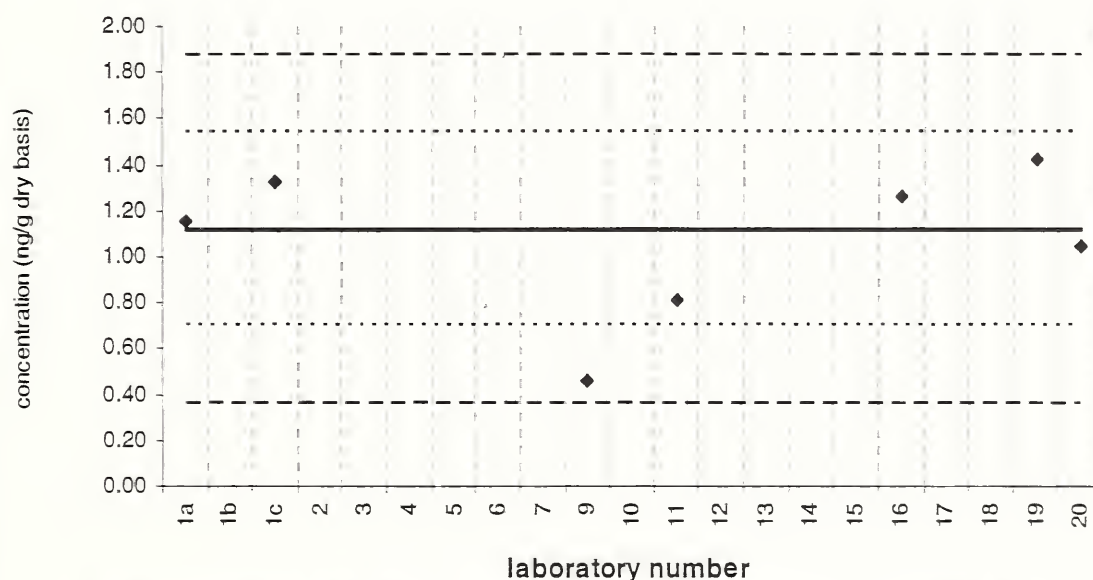


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

4,4'-DDT

SRM 1941b

Reference Value = 1.12 ± 0.42 ng/g (dry basis)
Reported Results: 15 Quantitative Results: 11



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

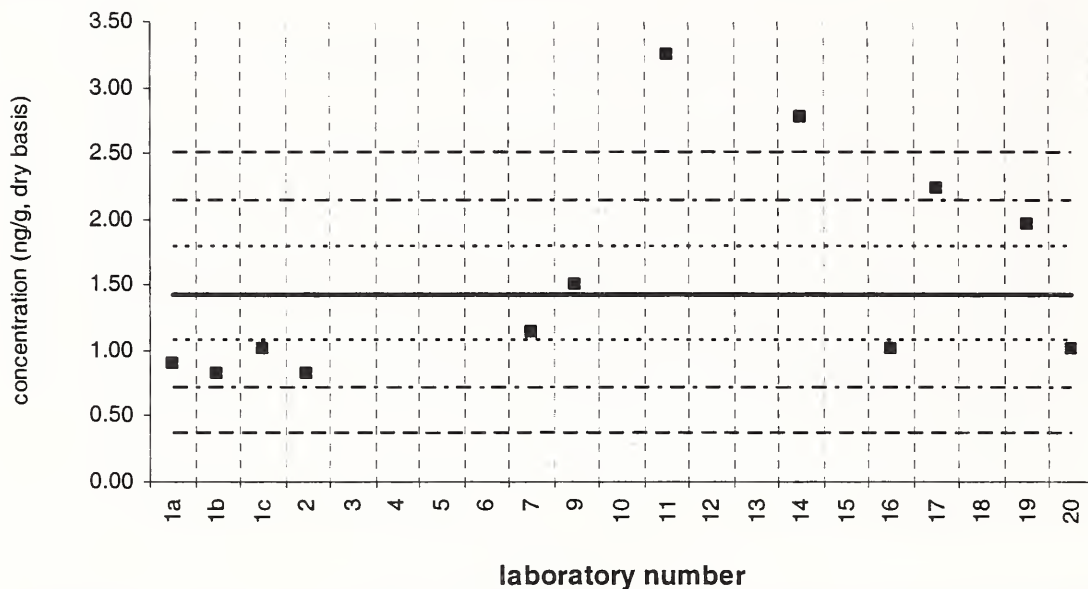
Lab 13 –
107 ng/g

PCB 8

Sediment XII (QA03SED12)

Assigned value = 1.43 ng/g $s = 0.77$ ng/g 95% CL = 0.55 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 12



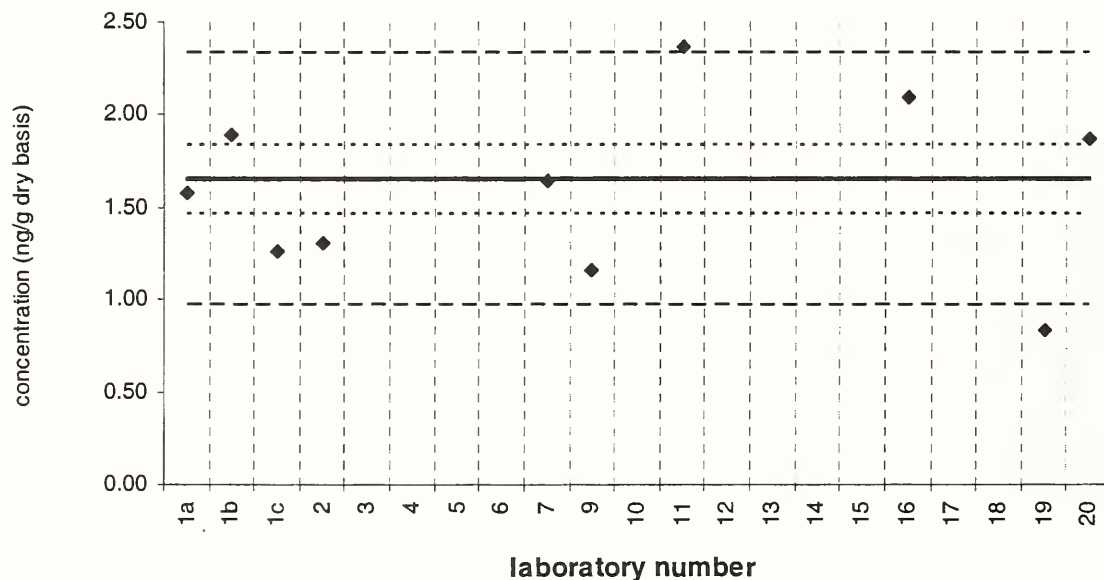
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 8

SRM 1941b

Certified Value = 1.65 ± 0.19 ng/g (dry basis)

Reported Results: 14 Quantitative Results: 14



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

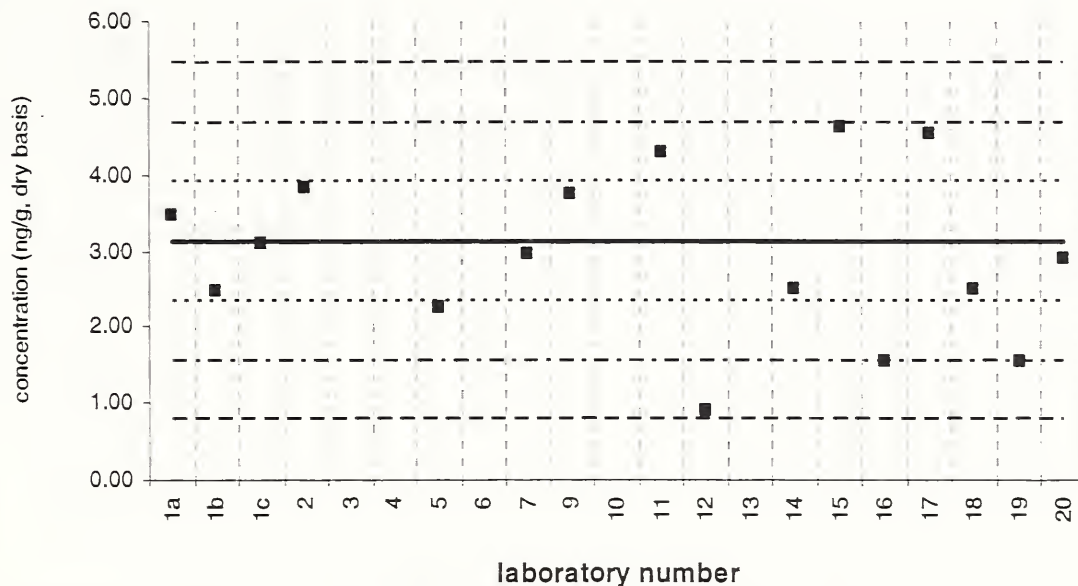
Lab 13 –
16.6 ng/g

PCB 18

Sediment XII (QA03SED12)

Assigned value = 3.12 ng/g $s = 1.01$ ng/g 95% CL = 0.58 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 16

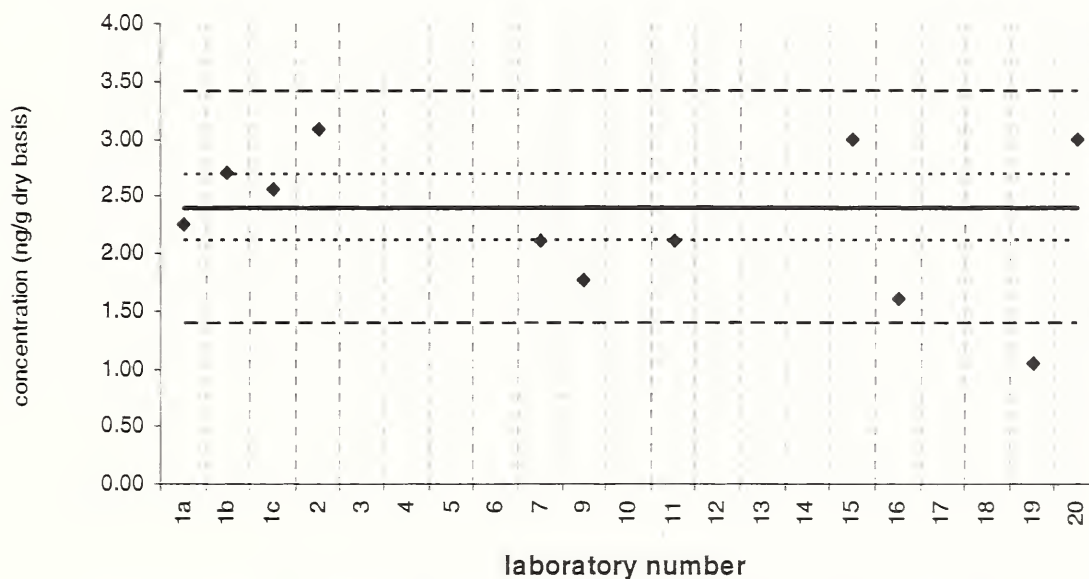


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 18

SRM 1941b

Certified Value = 2.39 ± 0.29 ng/g (dry basis)
Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

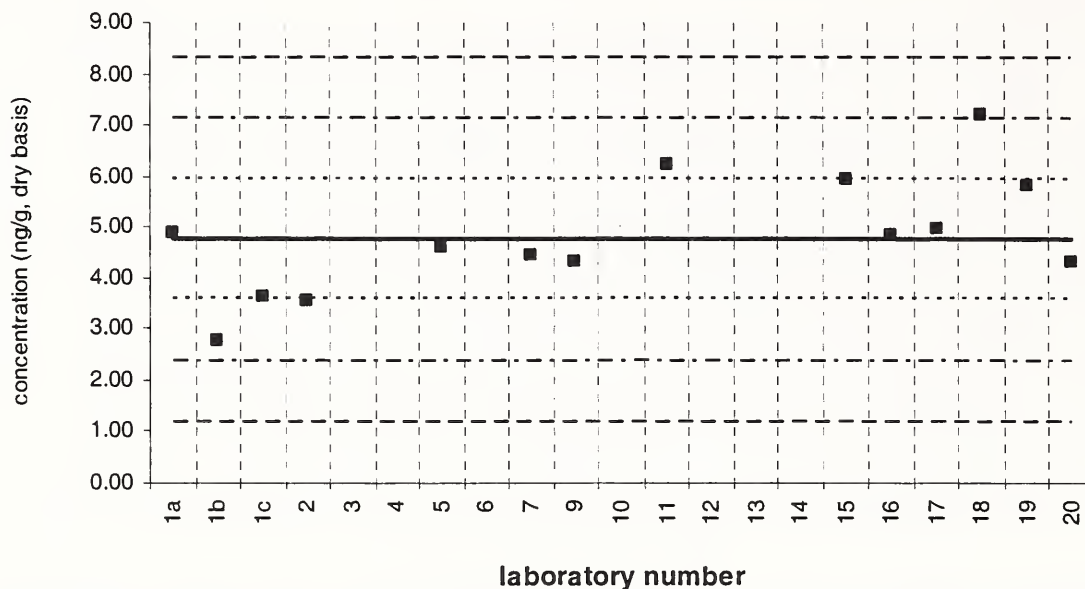
Lab 13 -
31.6 ng/g

PCB 28

Sediment XII (QA03SED12)

Assigned value = 4.75 ng/g $s = 1.19$ ng/g 95% CL = 0.75 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 14



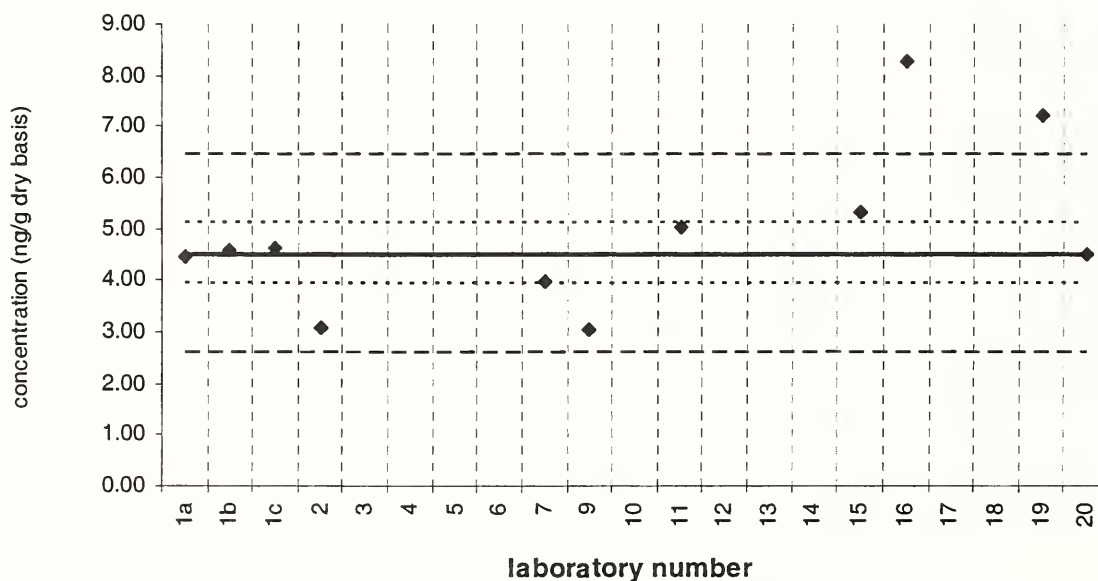
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 28

SRM 1941b

Certified Value = 4.52 ± 0.57 ng/g (dry basis)

Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

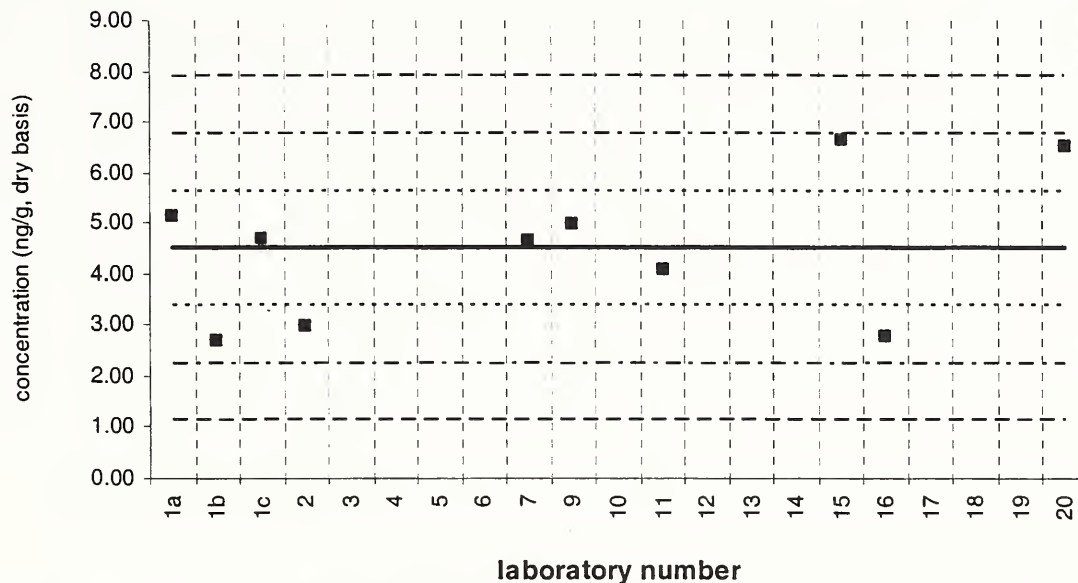
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

PCB 31

Sediment XII (QA03SED12)

Assigned value = 4.51 ng/g $s = 1.41$ ng/g 95% CL = 1.01 ng/g (dry basis)

Reported Results: 12 Quantitative Results: 10



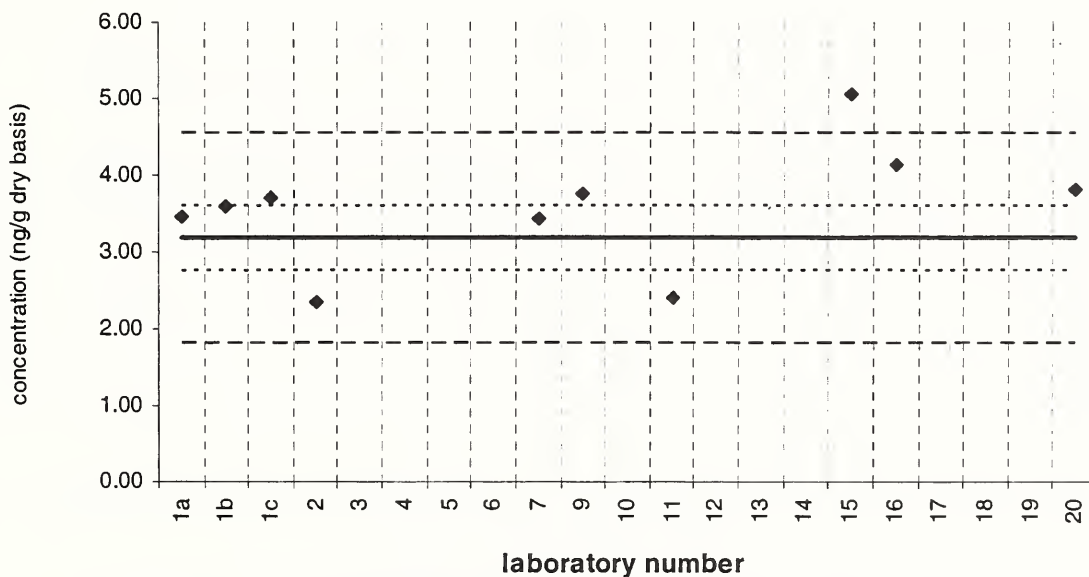
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 31

SRM 1941b

Certified Value = 3.18 ± 0.41 ng/g (dry basis)

Reported Results: 11 Quantitative Results: 11



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

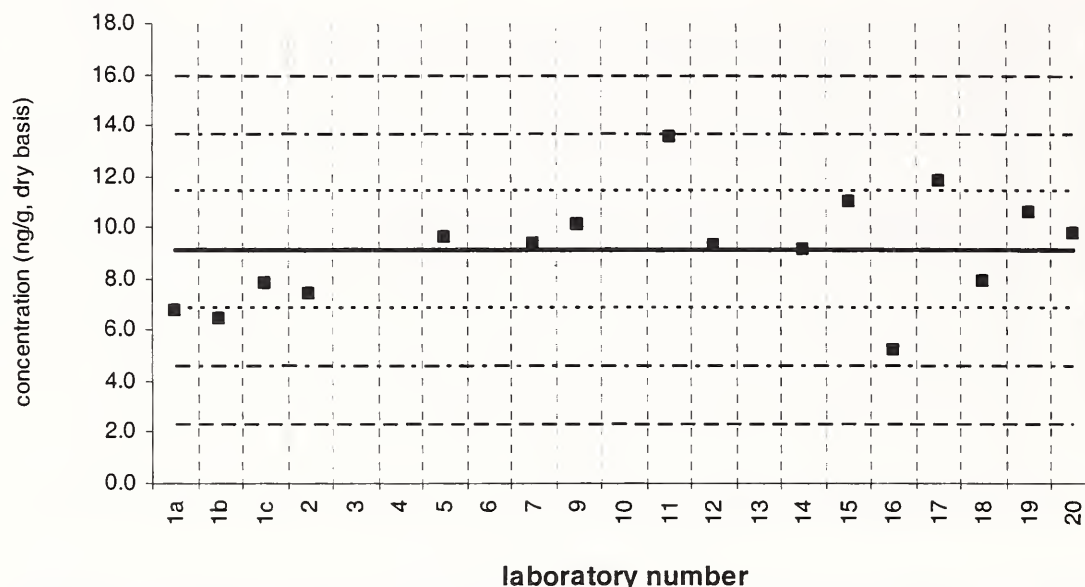
Lab 13 –
53.7 ng/g

PCB 44

Sediment XII (QA03SED12)

Assigned value = 9.09 ng/g $s = 2.30$ ng/g 95% CL = 1.39 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 16

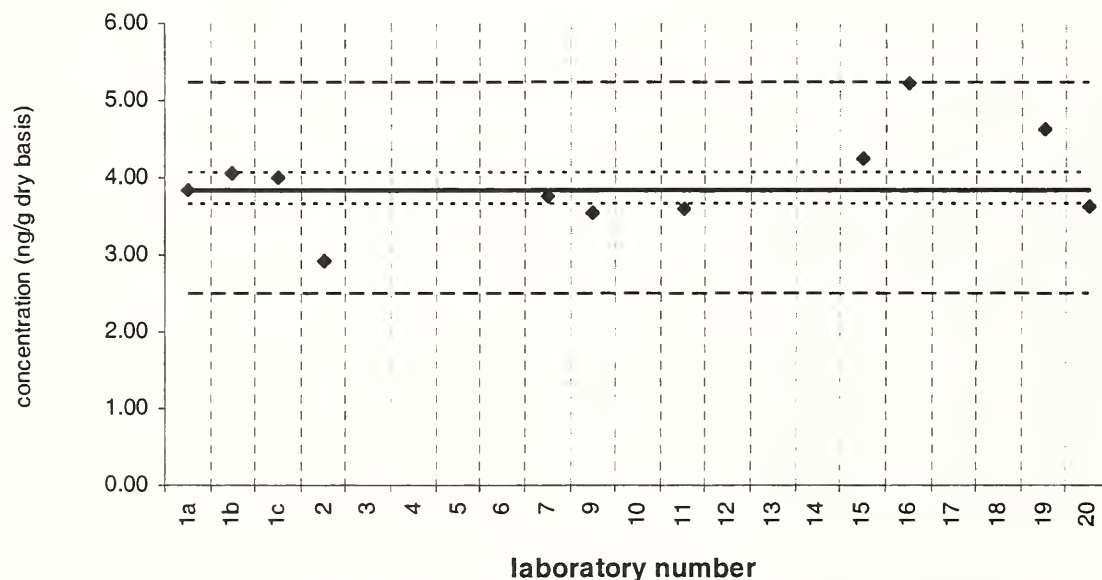


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$. (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 44

SRM 1941b

Certified Value = 3.85 ± 0.20 ng/g (dry basis)
Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

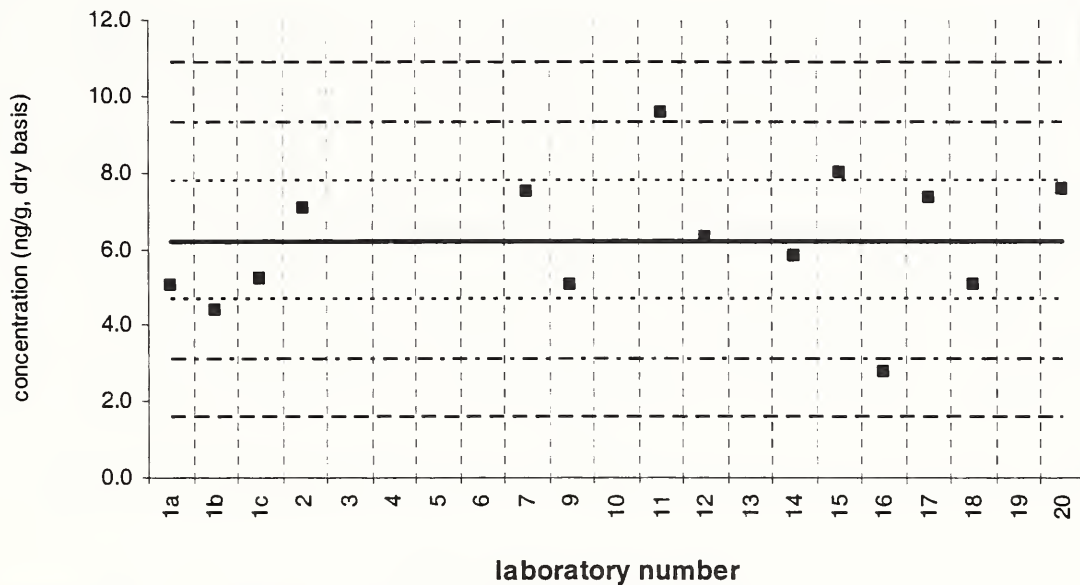
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 13 -
34.9 ng/g

PCB 49**Sediment XII (QA03SED12)**

Assigned value = 6.21 ng/g $s = 1.91$ ng/g 95% CL = 1.21 ng/g (dry basis)

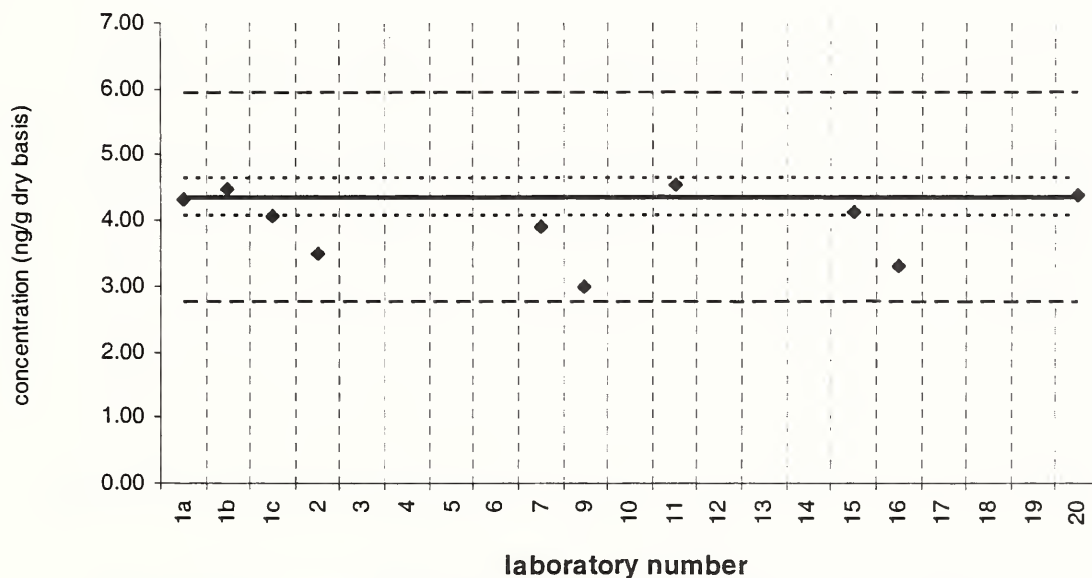
Reported Results: 15 Quantitative Results: 14



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 49**SRM 1941b**

Certified Value = 4.34 ± 0.28 ng/g (dry basis)
Reported Results: 13 Quantitative Results: 13



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

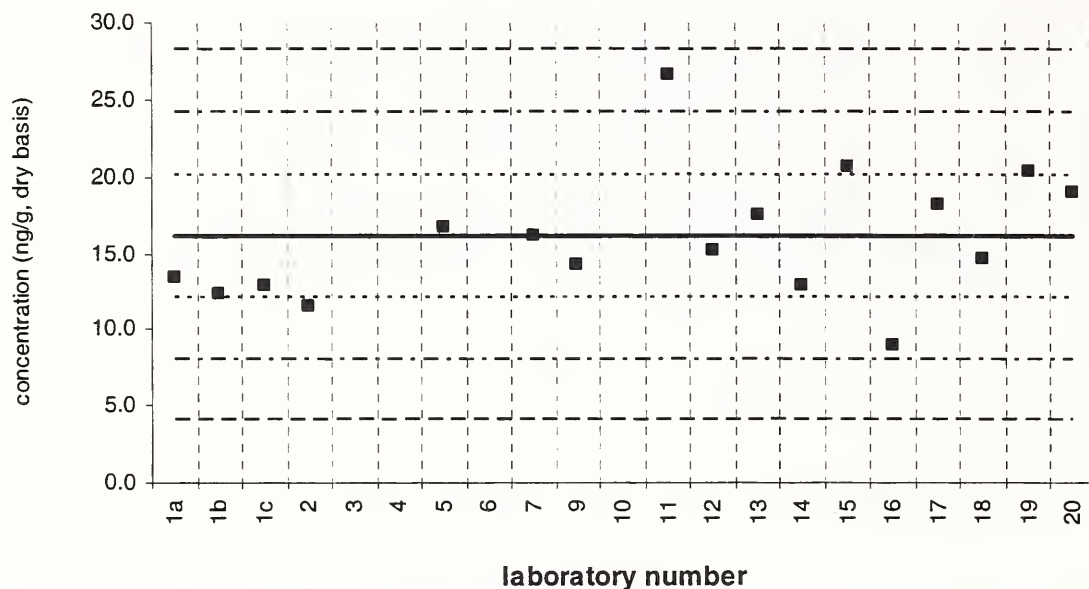
Lab 13 –
36.0 ng/g

PCB 52

Sediment XII (QA03SED12)

Assigned value = 16.1 ng/g $s = 4.6$ ng/g 95% CL = 2.8 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 17

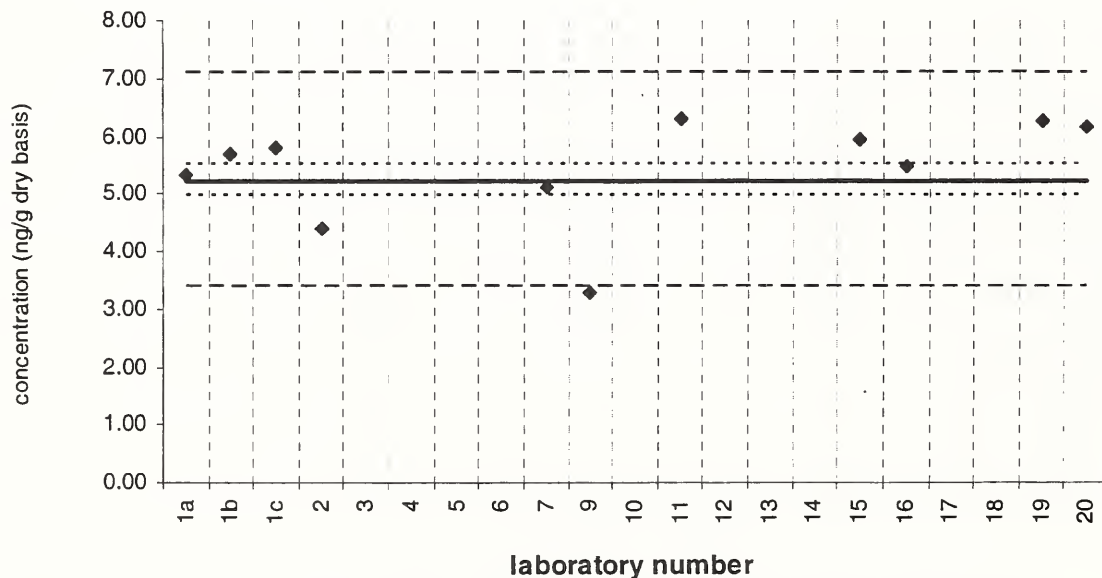


Solid line : exercise assigned value (EAV); dotted line: $z = \pm 1$ (25% from EAV); dotted/dashed line: $z = \pm 2$ (50% from EAV); dashed line: $z = \pm 3$ (75% from EAV)

PCB 52

SRM 1941b

Certified Value = 5.24 ± 0.28 ng/g (dry basis)
Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

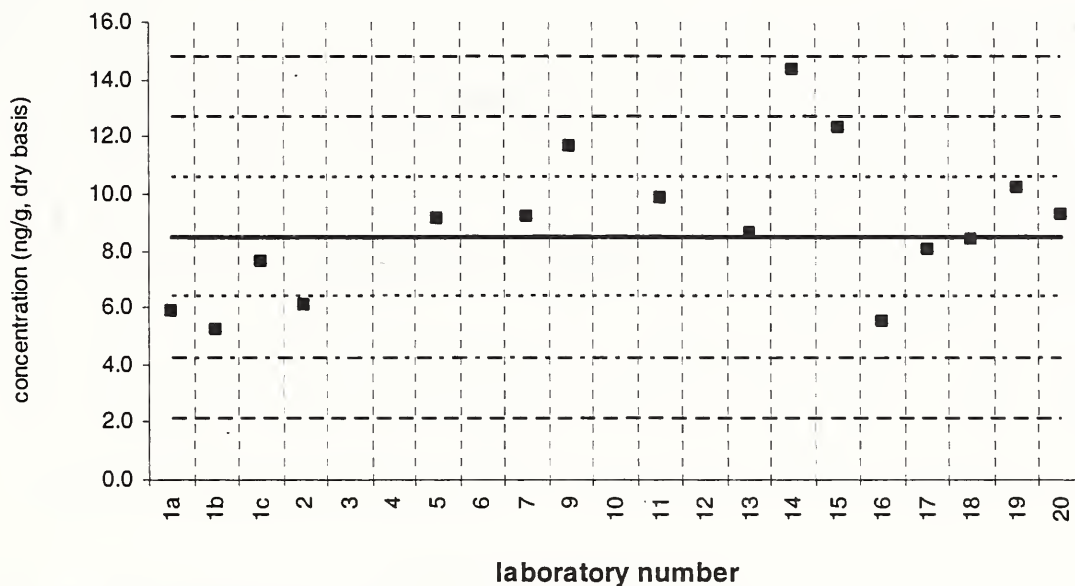
Lab 13 -
47.7 ng/g

PCB 66

Sediment XII (QA03SED12)

Assigned value = 8.46 ng/g $s = 2.22$ ng/g 95% CL = 1.34 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 16

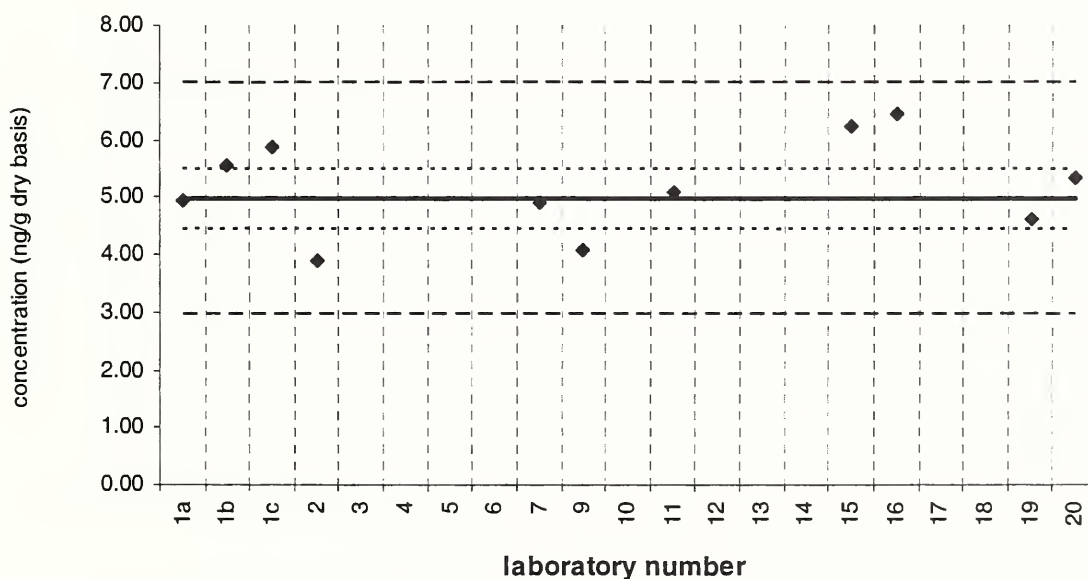


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 66

SRM 1941b

Certified Value = 4.96 ± 0.53 ng/g (dry basis)
Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

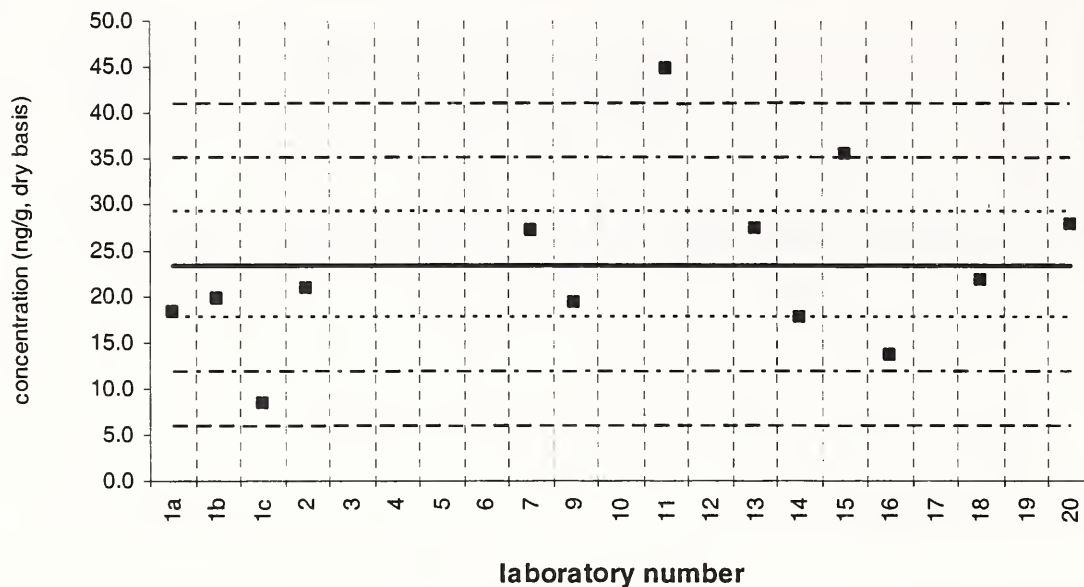
Lab 13 –
42.3 ng/g

PCB 95

Sediment XII (QA03SED12)

Assigned value = 23.4 ng/g $s = 10.1$ ng/g 95% CL = 6.8 ng/g (dry basis)

Reported Results: 14 Quantitative Results: 13

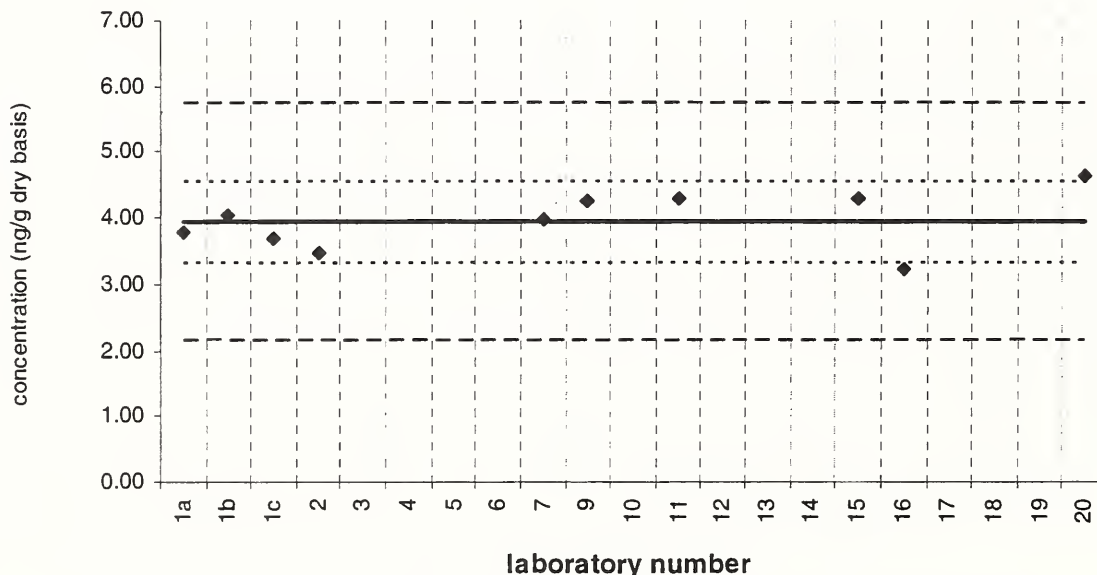


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 95

SRM 1941b

Certified Value = 3.93 ± 0.62 ng/g (dry basis)
Reported Results: 12 Quantitative Results: 12



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

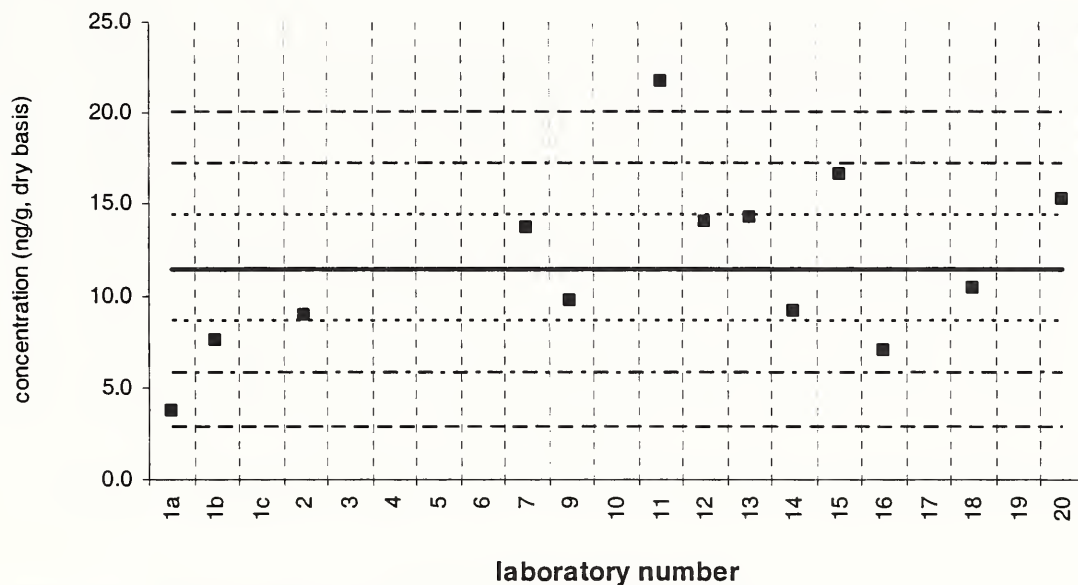
Lab 13 -
30.2 ng/g

PCB 99

Sediment XII (QA03SED12)

Assigned value = 11.5 ng/g $s = 5.3$ ng/g 95% CL = 3.8 ng/g (dry basis)

Reported Results: 14 Quantitative Results: 13

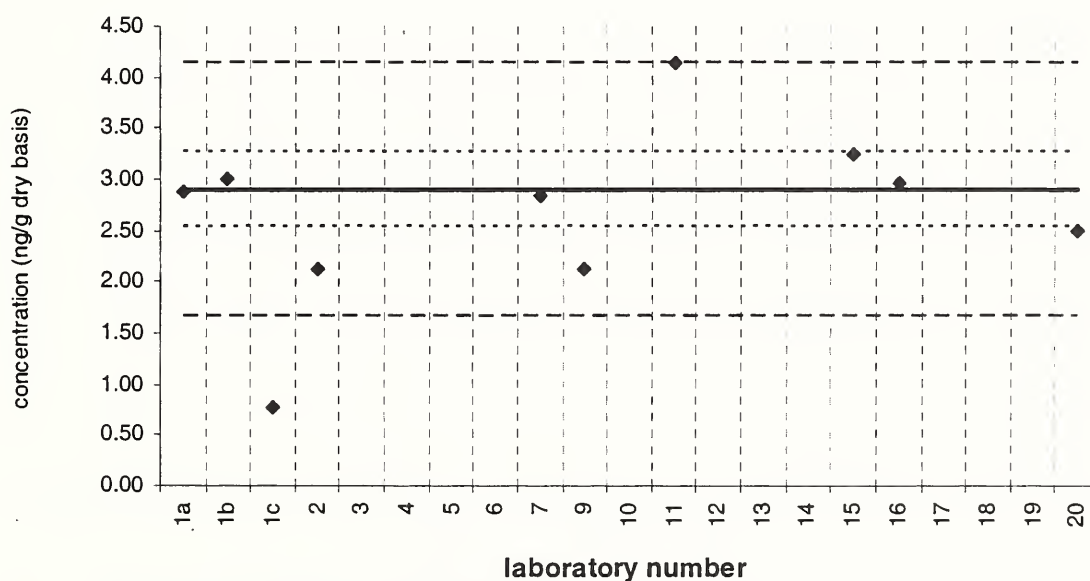


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 99

SRM 1941b

Certified Value = 2.90 ± 0.36 ng/g (dry basis)
Reported Results: 12 Quantitative Results: 12



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

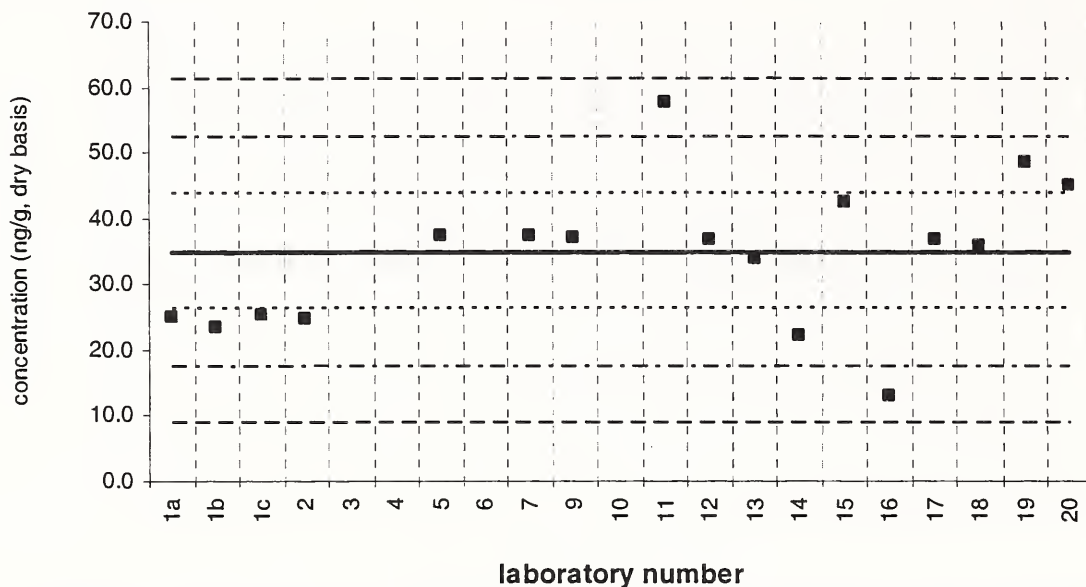
Lab 13 –
19.0 ng/g

PCB 101

Sediment XII (QA03SED12)

Assigned value = 34.9 ng/g $s = 11.7$ ng/g 95% CL = 6.8 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 17



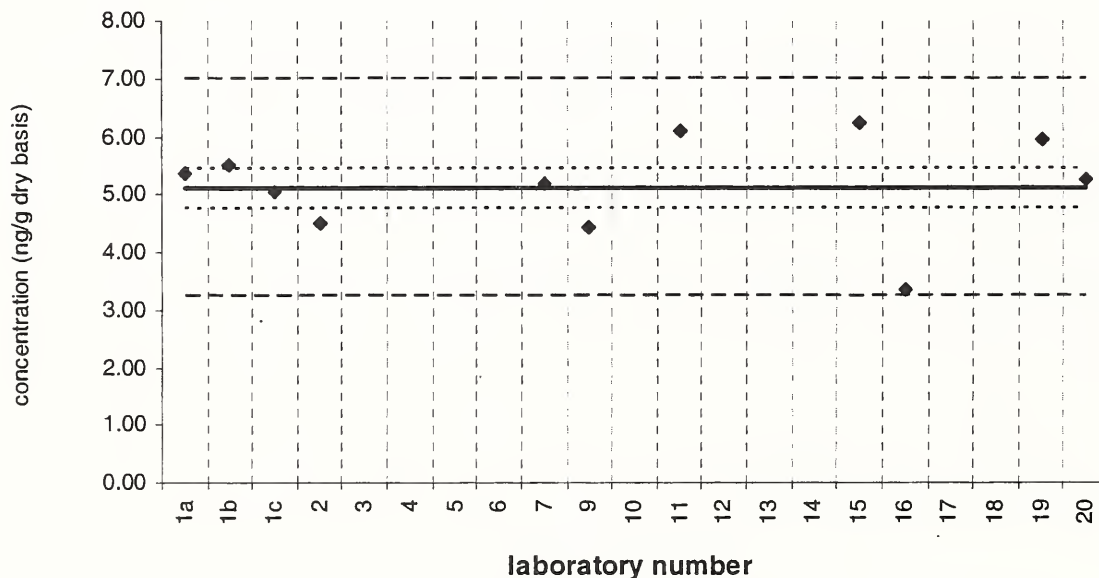
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 101

SRM 1941b

Certified Value = 5.11 ± 0.34 ng/g (dry basis)

Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

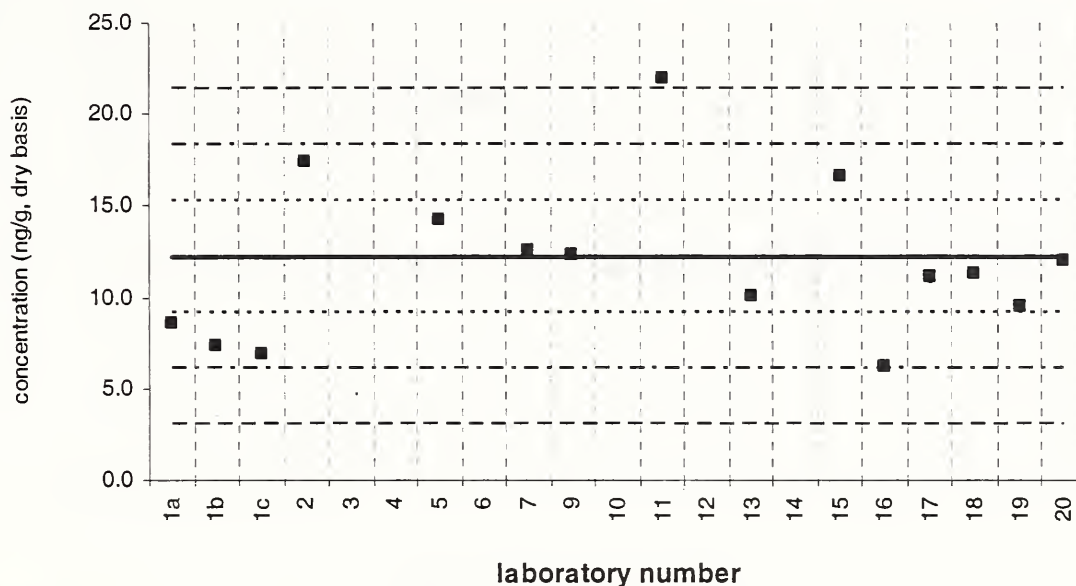
Lab 13 -
42.6 ng/g

PCB 105

Sediment XII (QA03SED12)

Assigned value = 12.2 ng/g $s = 4.5$ ng/g 95% CL = 2.7 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 15

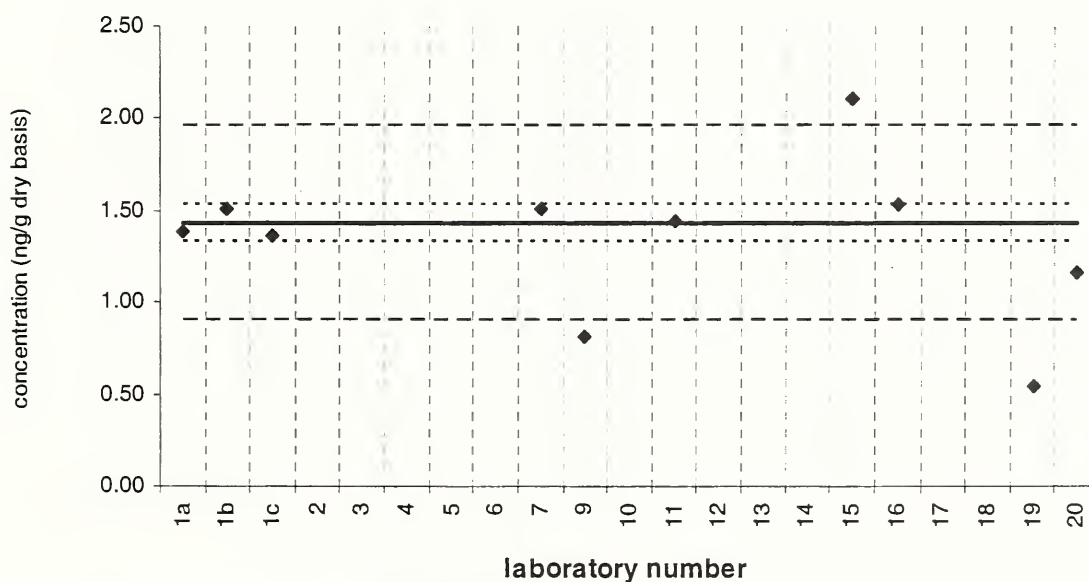


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 105

SRM 1941b

Certified Value = 1.43 ± 0.10 ng/g (dry basis)
Reported Results: 15 Quantitative Results: 14



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

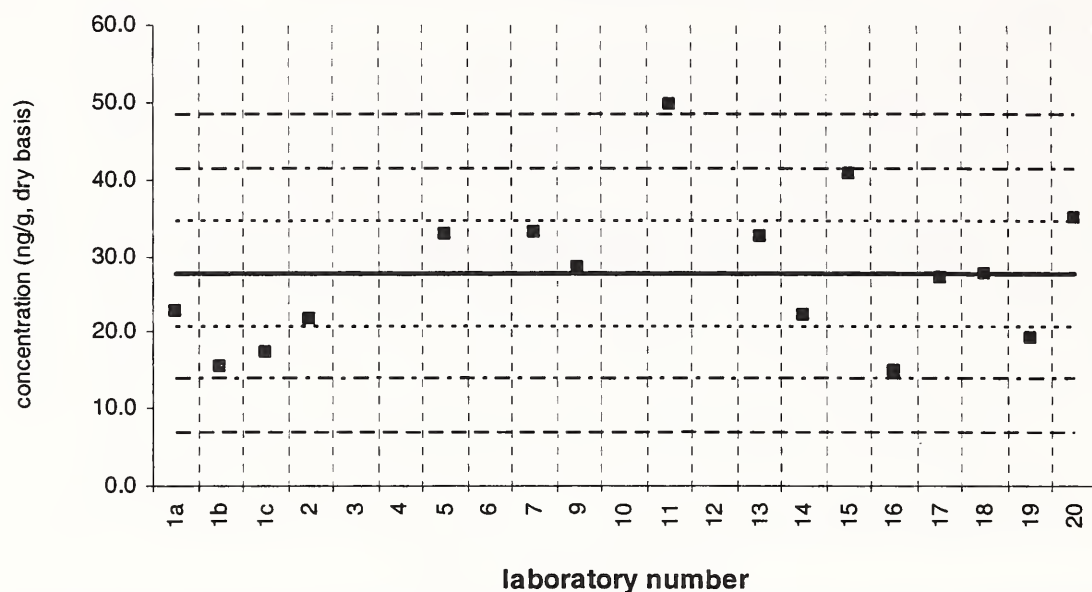
Lab 13 –
17.2 ng/g

PCB 118

Sediment XII (QA03SED12)

Assigned value = 27.6 ng/g $s = 10.0$ ng/g 95% CL = 6.1 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 16



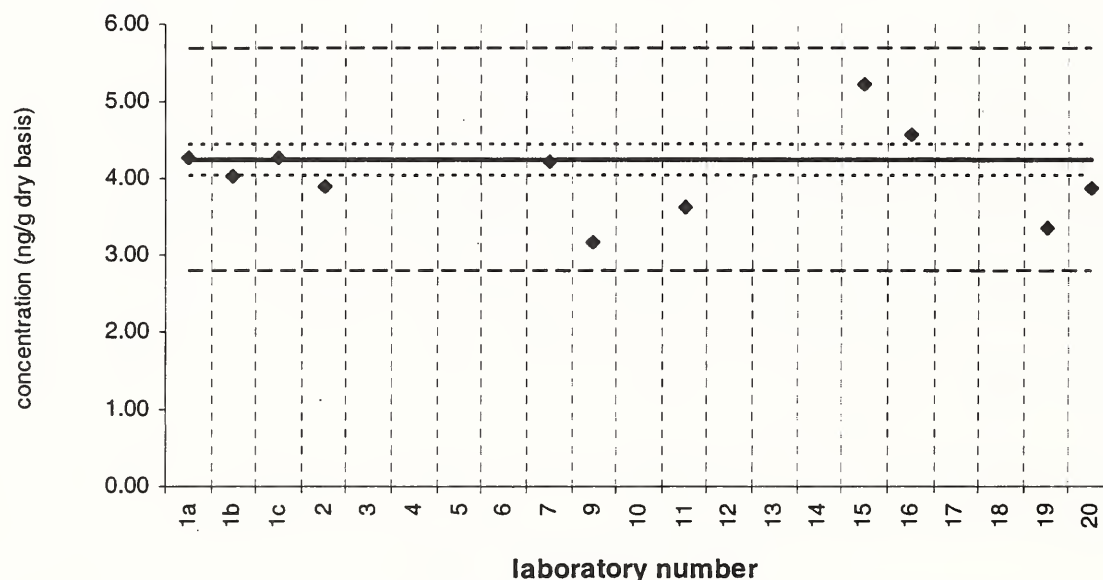
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 118

SRM 1941b

Certified Value = 4.23 ± 0.19 ng/g (dry basis)

Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

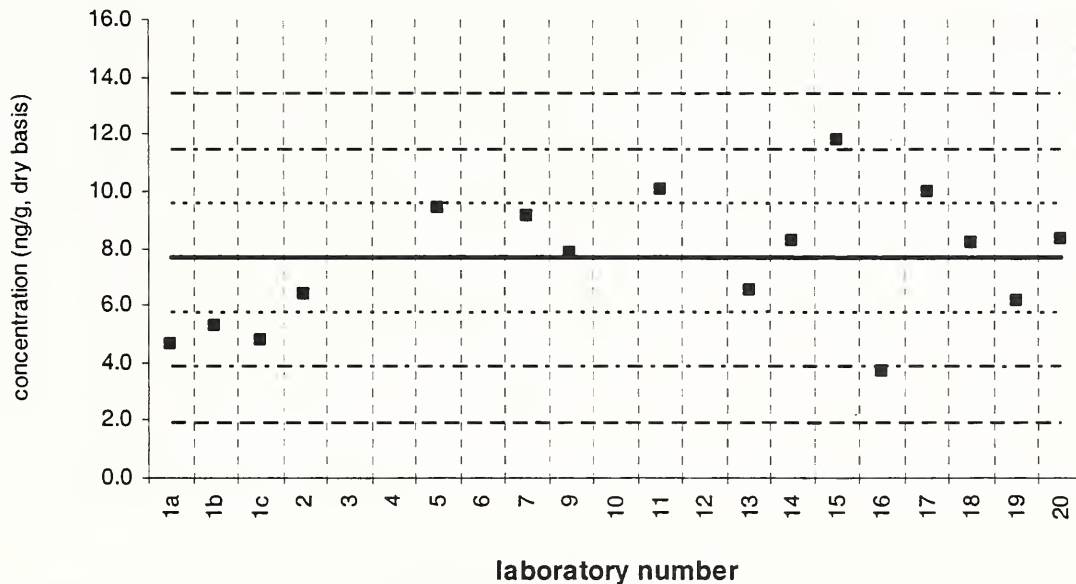
Lab 13 –
37.5 ng/g

PCB 128

Sediment XII (QA03SED12)

Assigned value = 7.65 ng/g $s = 2.50$ ng/g 95% CL = 1.51 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 16

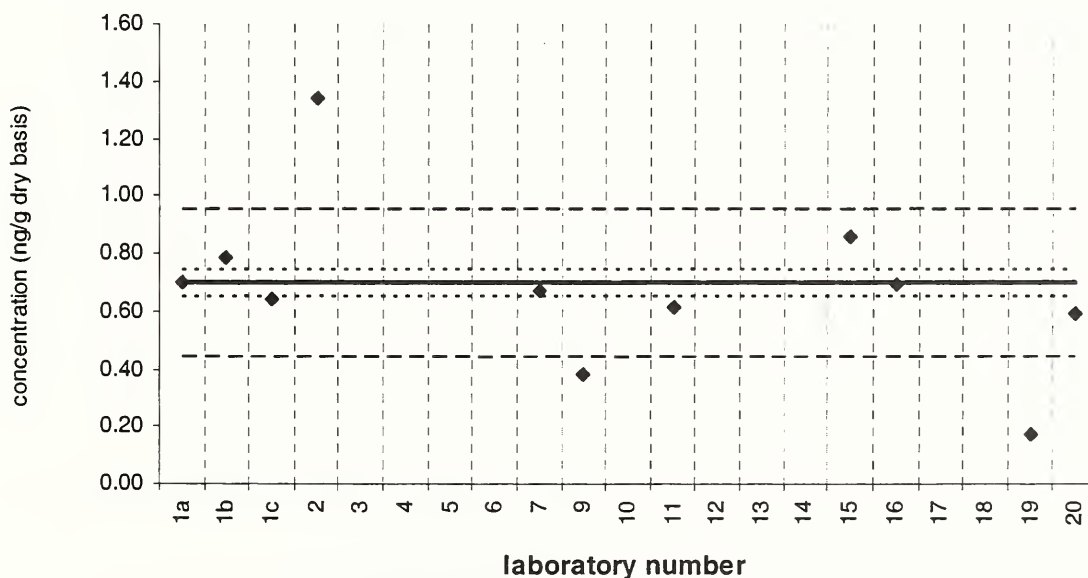


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 128

SRM 1941b

Certified Value = 0.696 ± 0.044 ng/g (dry basis)
Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

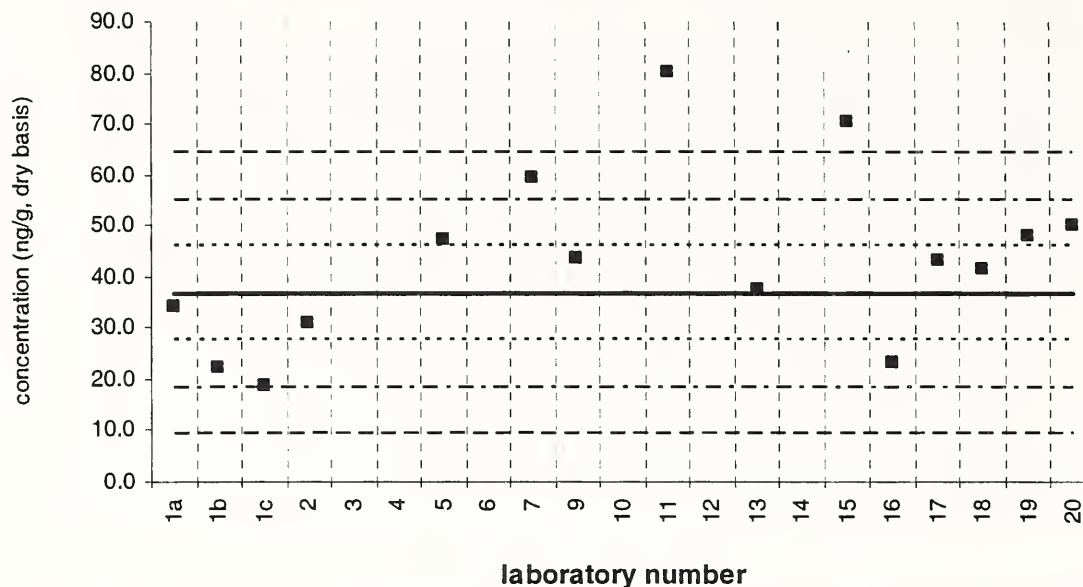
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Lab 13 –
6.63 ng/g

PCB 138**Sediment XII (QA03SED12)**

Assigned value = 36.7 ng/g $s = 11.3$ ng/g 95% CL = 7.6 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 15

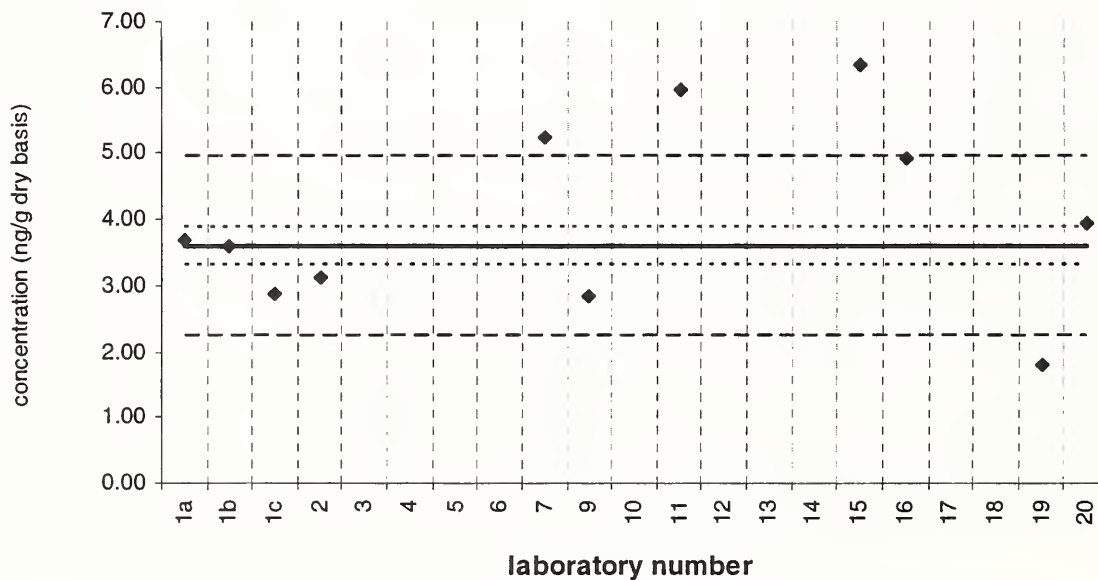


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 138**SRM 1941b**

Certified Value = 3.60 ± 0.28 ng/g (dry basis)

Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

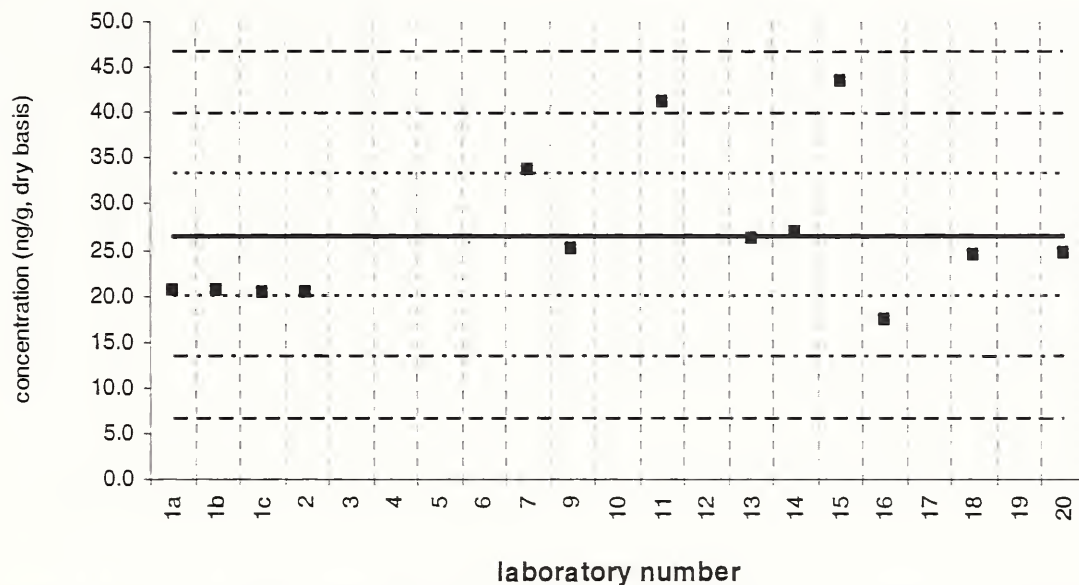
Lab 13 –
26.9 ng/g

PCB 149

Sediment XII (QA03SED12)

Assigned value = 26.6 ng/g $s = 8.9$ ng/g 95% CL = 6.0 ng/g (dry basis)

Reported Results: 13 Quantitative Results: 13

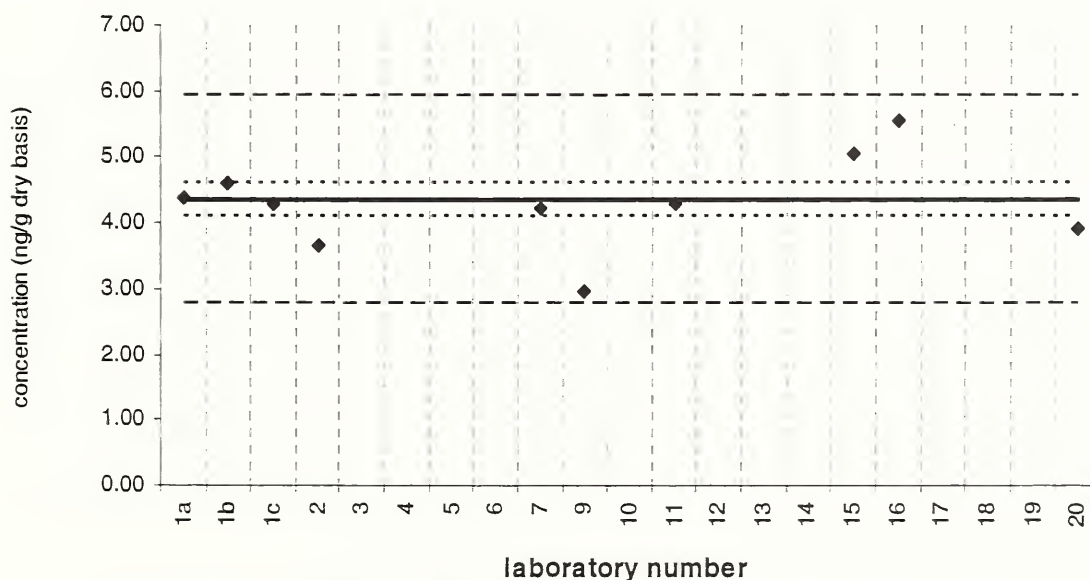


Solid line : exercise assigned value (EAV); dotted line: $z = \pm 1$ (25% from EAV); dotted/dashed line: $z = \pm 2$ (50% from EAV); dashed line: $z = \pm 3$ (75% from EAV)

PCB 149

SRM 1941b

Certified Value = 4.35 ± 0.26 ng/g (dry basis)
Reported Results: 12 Quantitative Results: 12



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

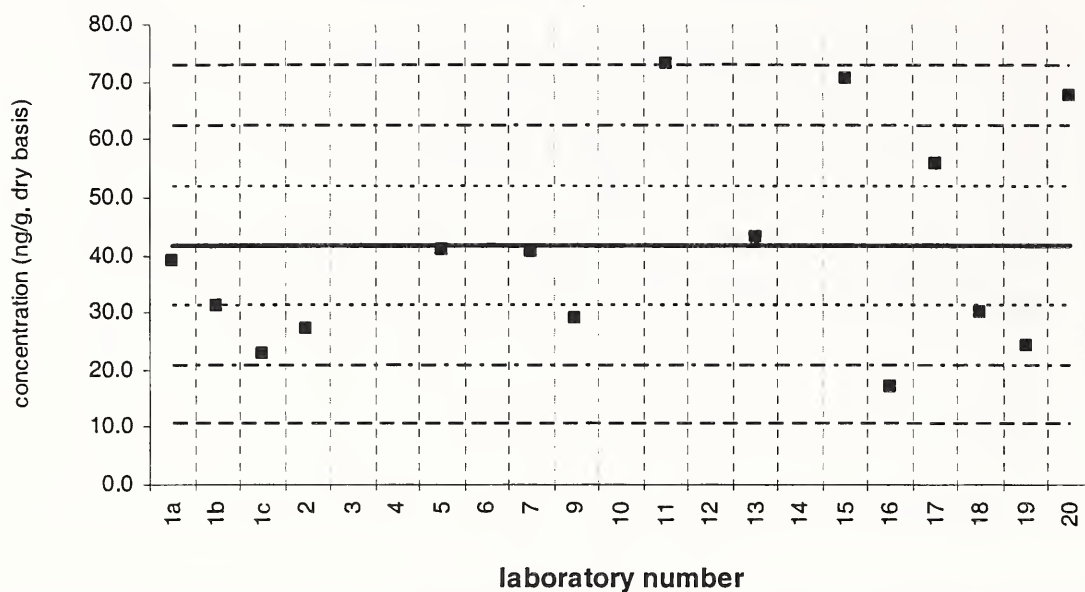
Lab 13 –
28.3 ng/g

PCB 153

Sediment XII (QA03SED12)

Assigned value = 41.5 ng/g $s = 19.2$ ng/g 95% CL = 11.6 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 15



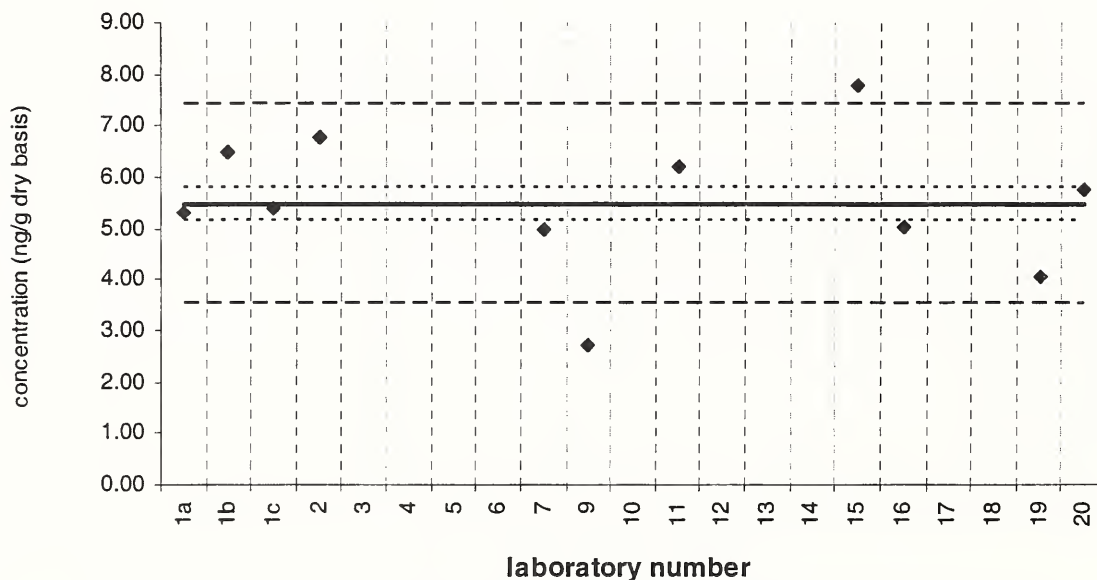
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 153

SRM 1941b

Certified Value = 5.47 ± 0.32 ng/g (dry basis)

Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

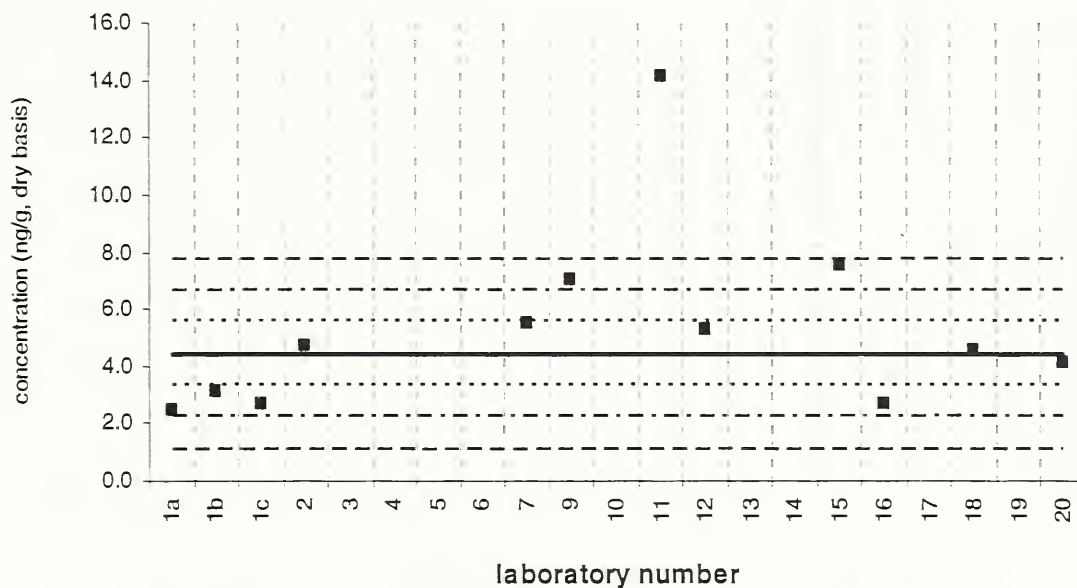
Lab 13 -
53.9 ng/g

PCB 156

Sediment XII (QA03SED12)

Assigned value = 4.43 ng/g $s = 1.80$ ng/g 95% CL = 1.29 ng/g (dry basis)

Reported Results: 13 Quantitative Results: 12

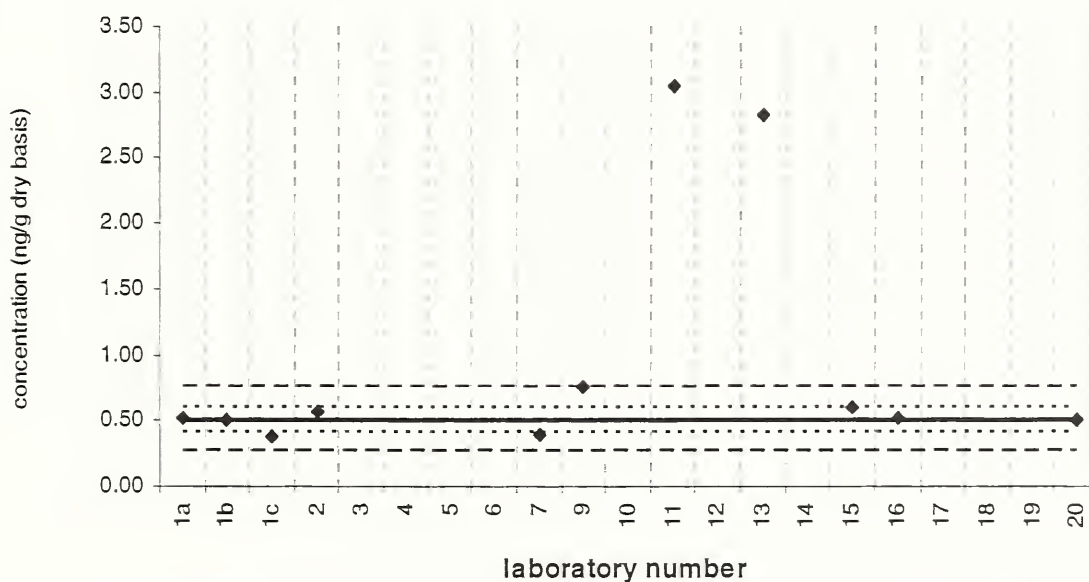


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 156

SRM 1941b

Certified Value = 0.507 ± 0.090 ng/g (dry basis)
Reported Results: 12 Quantitative Results: 12



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

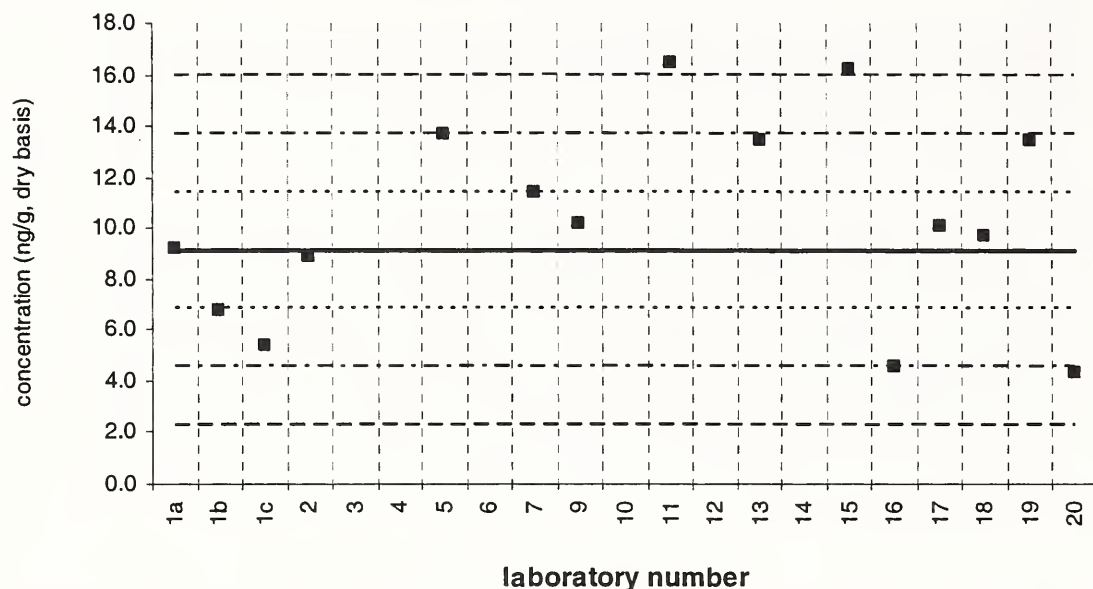
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

PCB 170

Sediment XII (QA03SED12)

Assigned value = 9.11 ng/g $s = 3.75$ ng/g 95% CL = 2.52 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 15



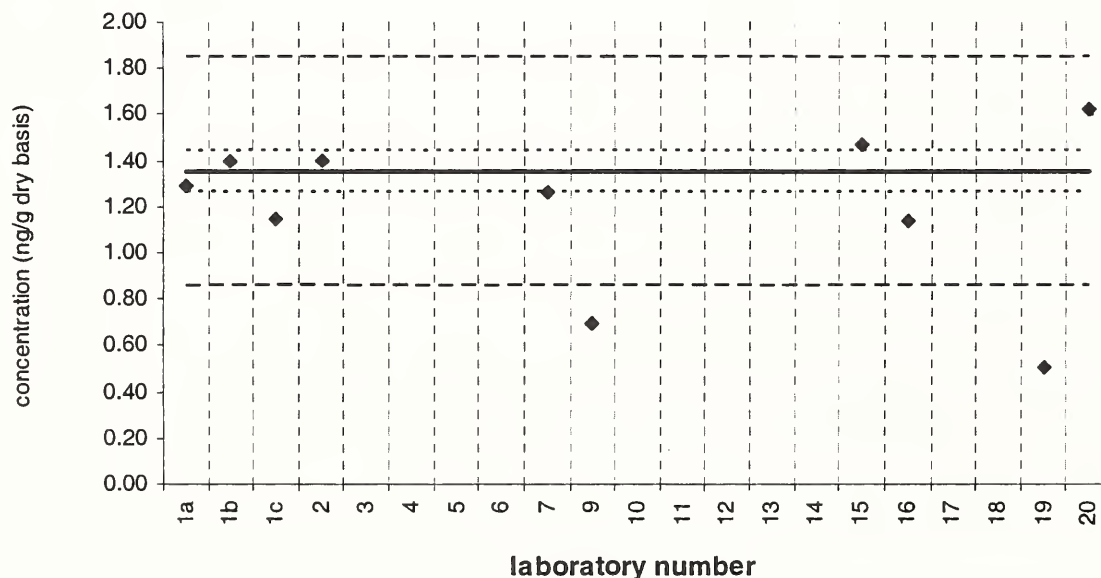
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 170

SRM 1941b

Certified Value = 1.35 ± 0.09 ng/g (dry basis)

Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

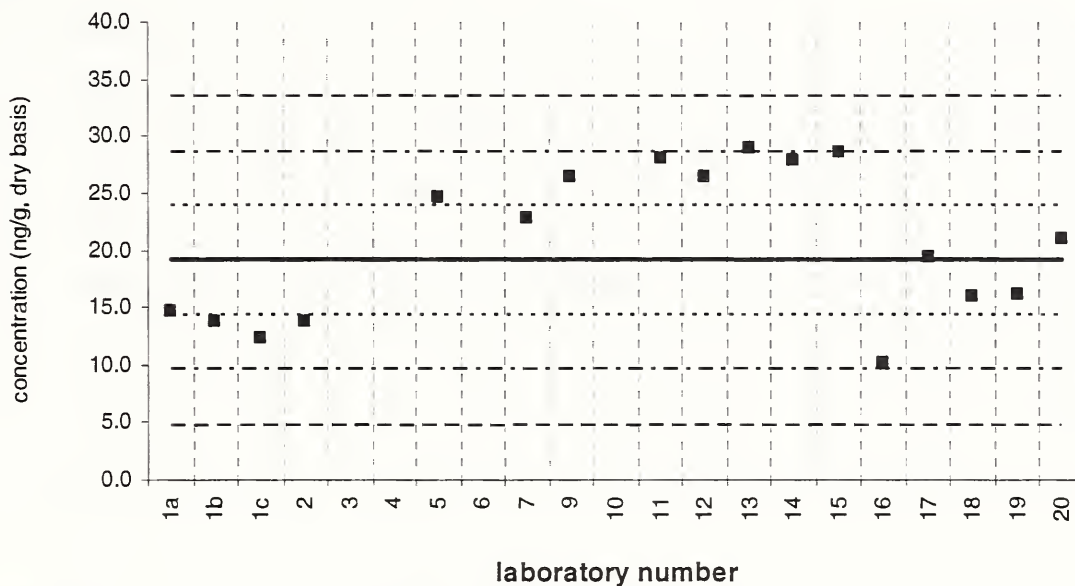
Lab 11 -
23.1 ng/g;
lab 13 -
12.6 ng/g

PCB 180

Sediment XII (QA03SED12)

Assigned value = 19.1 ng/g $s = 6.2$ ng/g 95% CL = 3.7 ng/g (dry basis)

Reported Results: 17 Quantitative Results: 17

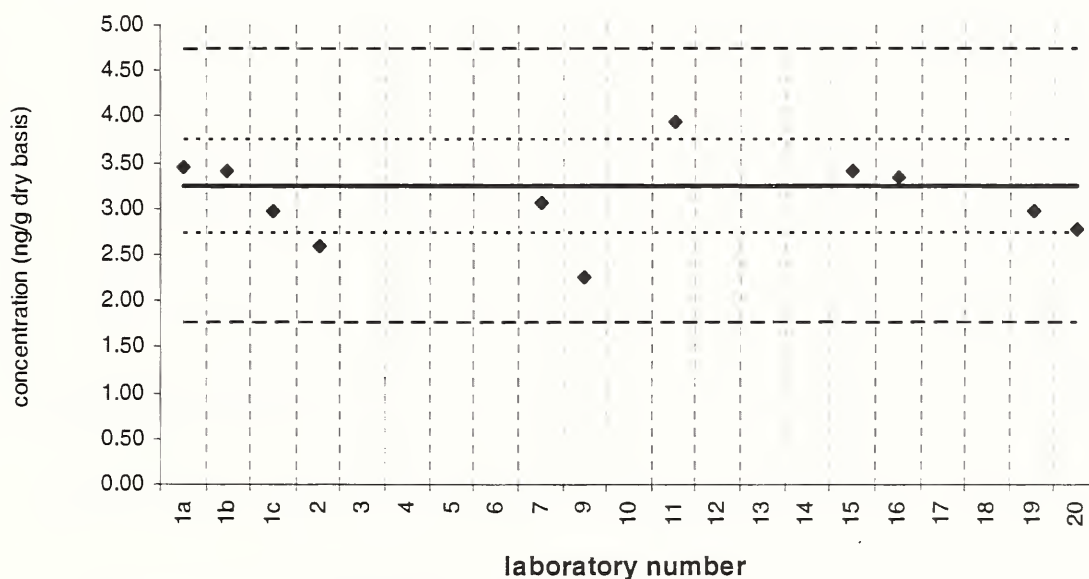


Solid line : exercise assigned value (EAV); dotted line: $z = \pm 1$ (25% from EAV); dotted/dashed line: $z = \pm 2$ (50% from EAV); dashed line: $z = \pm 3$ (75% from EAV)

PCB 180

SRM 1941b

Certified Value = 3.24 ± 0.51 ng/g (dry basis)
Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

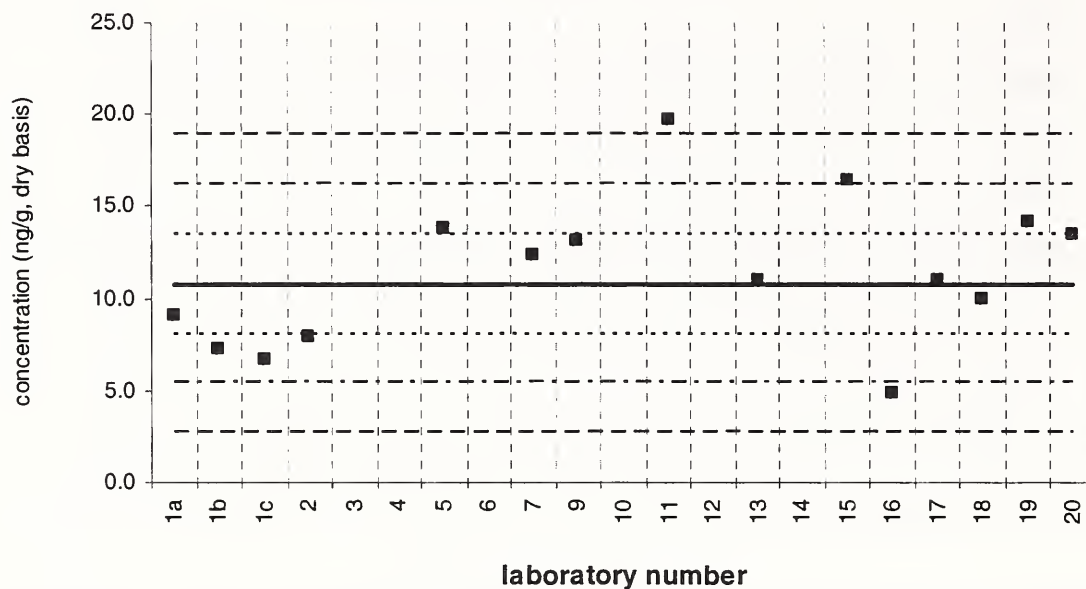
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

lab 13 -
35.8 ng/g

PCB 187**Sediment XII (QA03SED12)**

Assigned value = 10.8 ng/g $s = 3.5$ ng/g 95% CL = 2.1 ng/g (dry basis)

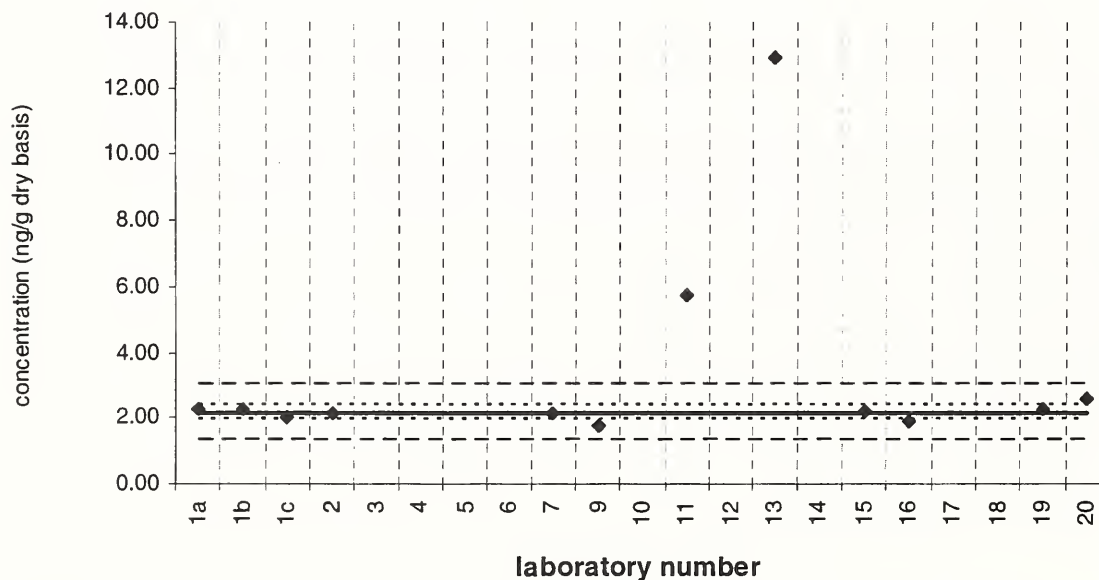
Reported Results: 16 Quantitative Results: 15



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 187**SRM 1941b**

Certified Value = 2.17 ± 0.22 ng/g (dry basis)
Reported Results: 15 Quantitative Results: 15



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

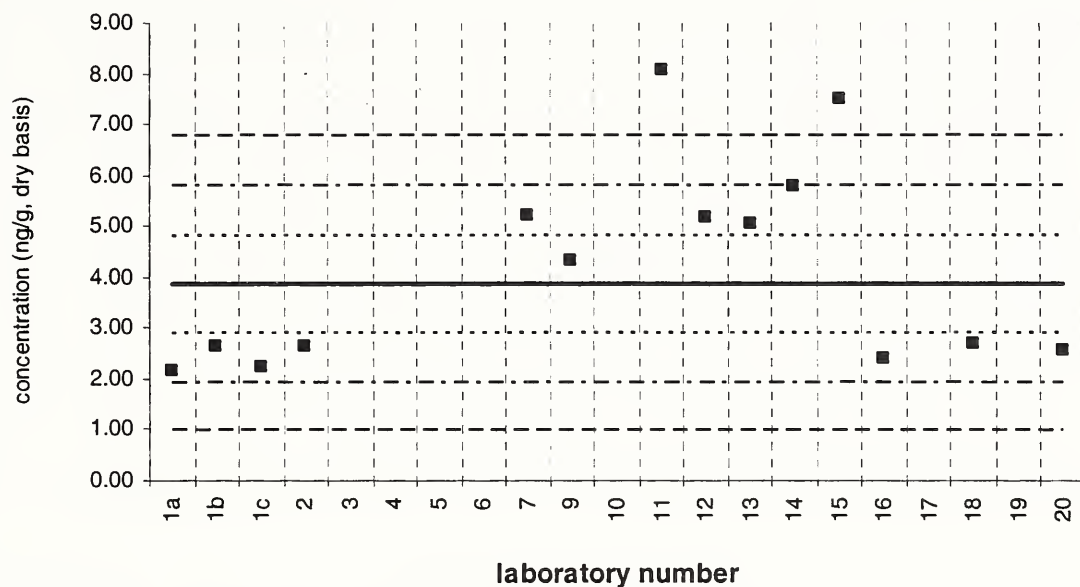
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

PCB 194

Sediment XII (QA03SED12)

Assigned value = 3.86 ng/g $s = 2.16$ ng/g 95% CL = 1.45 ng/g (dry basis)

Reported Results: 14 Quantitative Results: 14



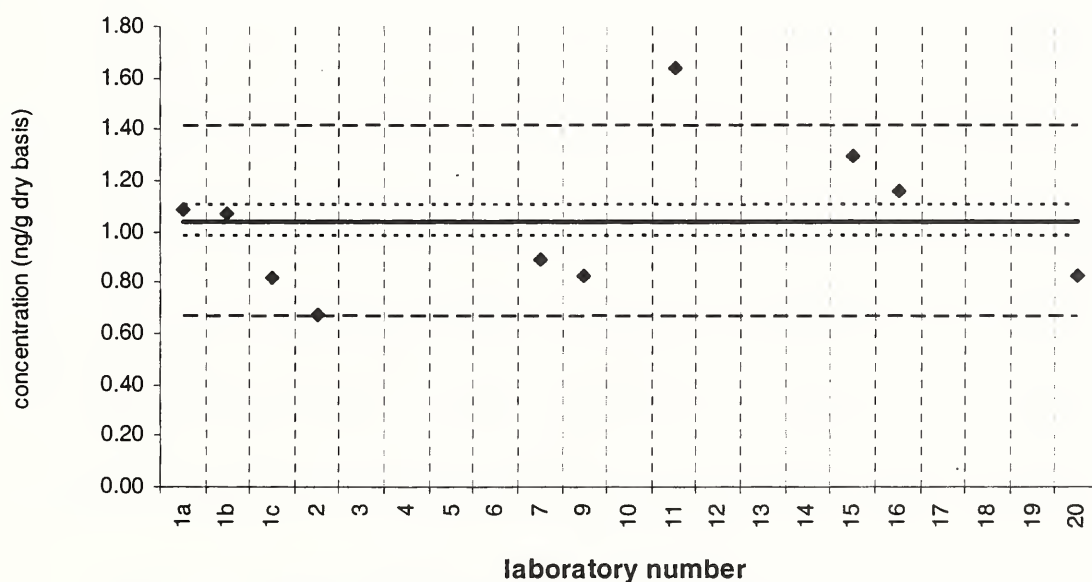
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 194

SRM 1941b

Certified Value = 1.04 ± 0.06 ng/g (dry basis)

Reported Results: 12 Quantitative Results: 12



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

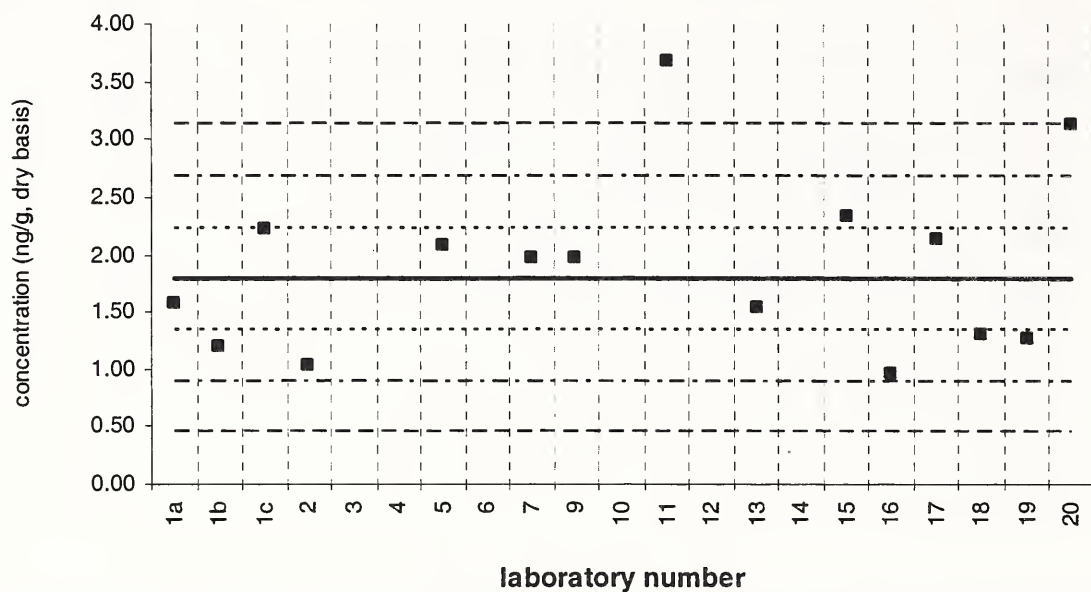
lab 13 -
9.92 ng/g

PCB 195

Sediment XII (QA03SED12)

Assigned value = 1.79 ng/g $s = 0.63$ ng/g 95% CL = 0.40 ng/g (dry basis)

Reported Results: 15 Quantitative Results: 15

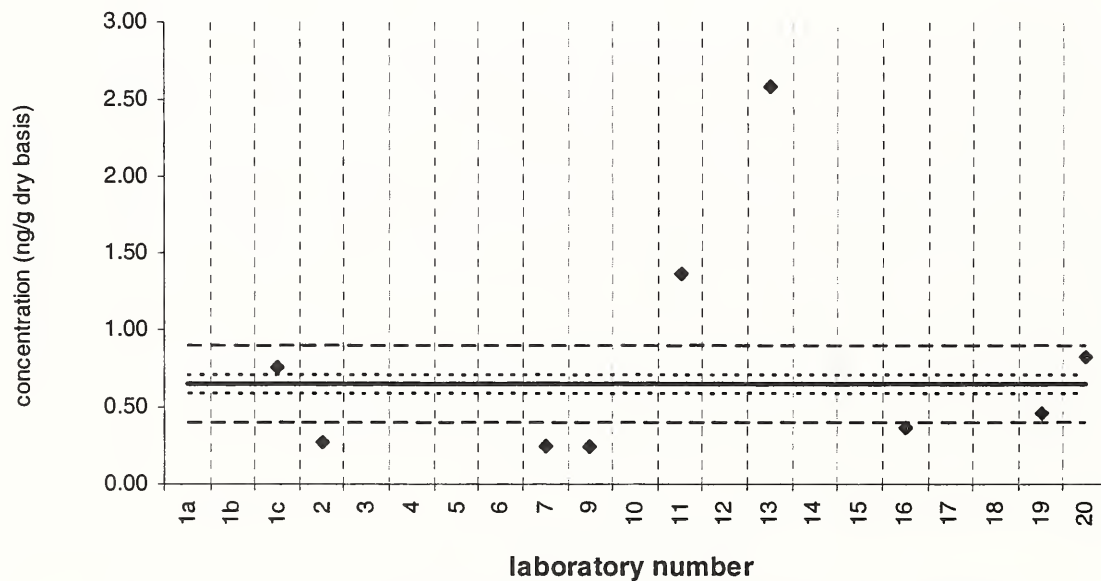


Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 195

SRM 1941b

Certified Value = 0.645 ± 0.060 ng/g (dry basis)
Reported Results: 15 Quantitative Results: 12



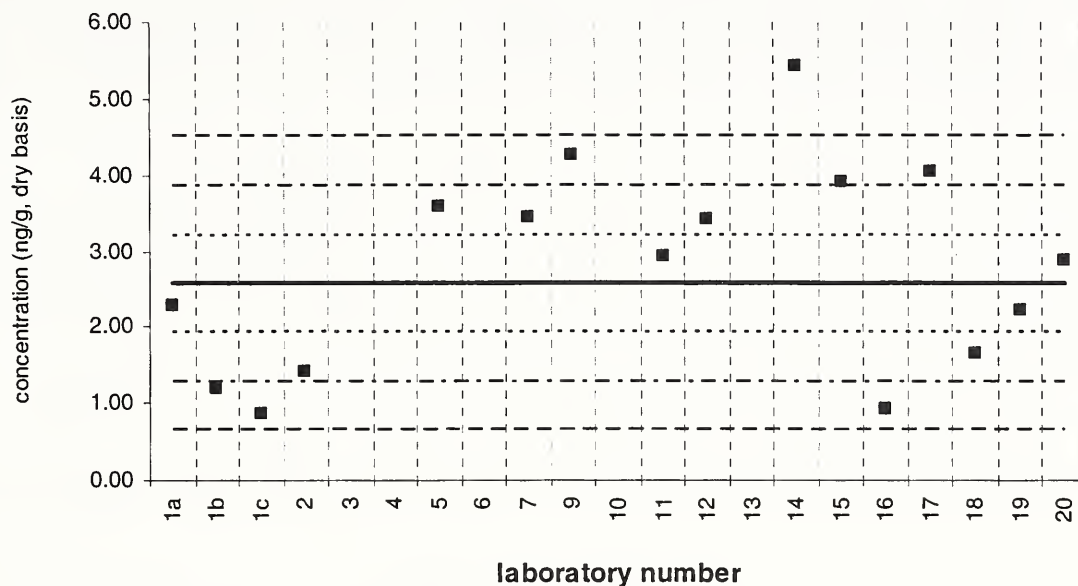
Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

PCB 206**Sediment XII (QA03SED12)**

Assigned value = 2.57 ng/g $s = 1.25$ ng/g 95% CL = 0.75 ng/g (dry basis)

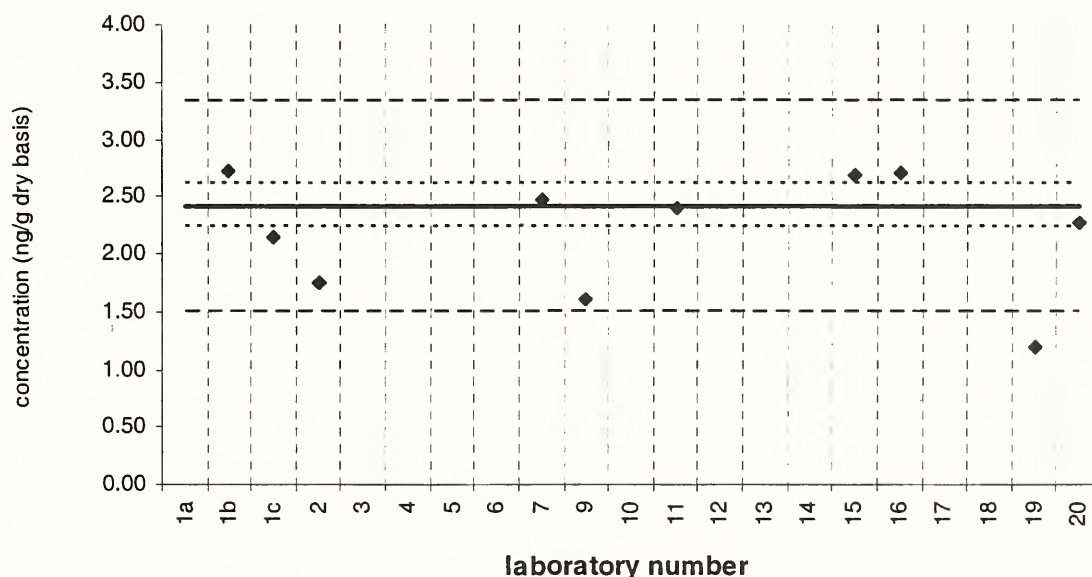
Reported Results: 16 Quantitative Results: 16



Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 206**SRM 1941b**

Certified Value = 2.42 ± 0.19 ng/g (dry basis)
Reported Results: 14 Quantitative Results: 13



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

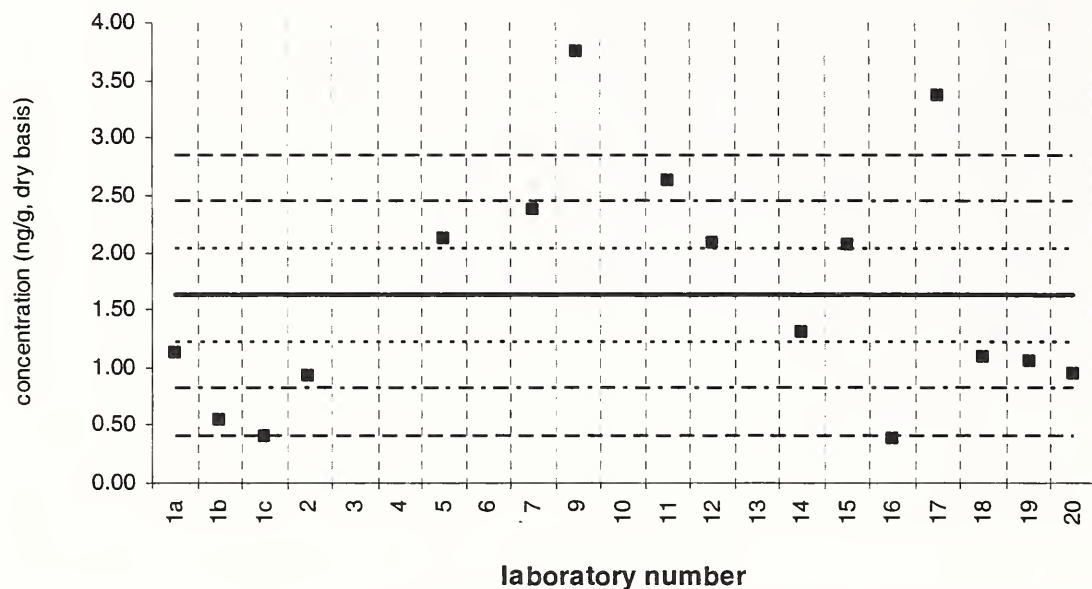
Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

PCB 209

Sediment XII (QA03SED12)

Assigned value = 1.62 ng/g $s = 1.10$ ng/g 95% CL = 0.63 ng/g (dry basis)

Reported Results: 16 Quantitative Results: 16



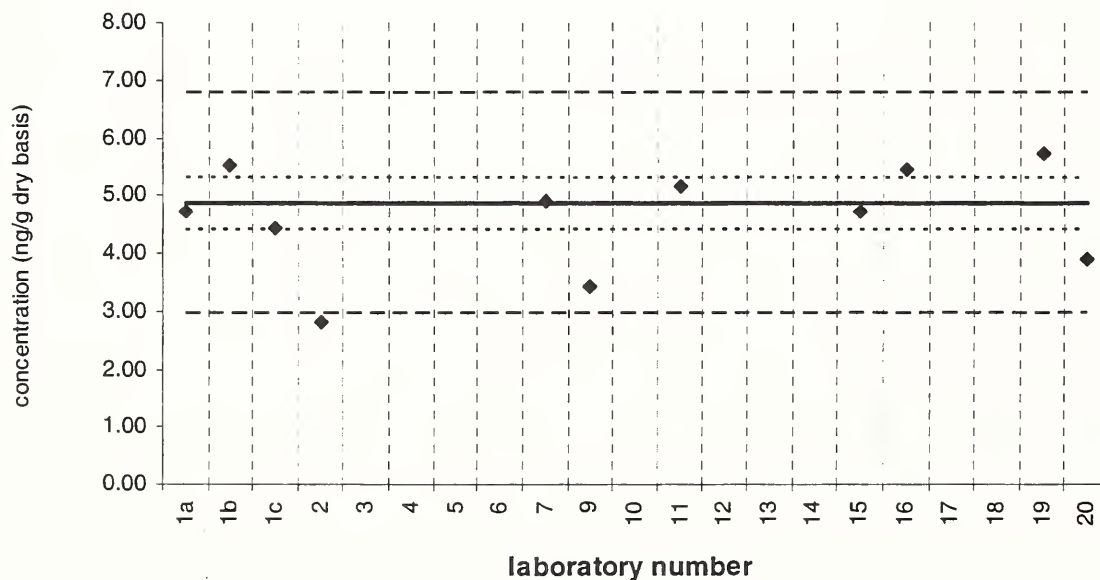
Solid line : exercise assigned value (EAV); dotted line: $z=\pm 1$ (25% from EAV); dotted/dashed line: $z=\pm 2$ (50% from EAV); dashed line: $z=\pm 3$ (75% from EAV)

PCB 209

SRM 1941b

Certified Value = 4.86 ± 0.45 ng/g (dry basis)

Reported Results: 14 Quantitative Results: 14



Note: Lab 3 used SRM 1941a as the control, and labs 5, 6, 17, and 18 used SRM 1944.

Solid line: value from Certificate of Analysis ; dotted line: 95% confidence limits; dashed line: 30% from 95% confidence limits

Appendix I: List of Laboratories Participating in 2003 Intercomparison Exercises

For this exercise, data were received from the following laboratories within the required timeframe. (This listing does NOT correspond to the laboratory number identification codes used in this report which were assigned in order of receipt of data with the exception of NIST which is Laboratory #1 in this exercise. The same code was used for both exercises.)

Academy of Natural Sciences
1900 Benjamin Franklin Parkway
Philadelphia, PA 19103
Jeffrey Ashley

B& B Laboratories
1902 Pinon
College Station, TX 77845
Jaun Ramirez

Battelle Columbus
505 King Ave
Columbus, OH 43201
Mary Schrock

Battelle Duxbury Operations
397 Washington Street
Duxbury, MA 02332
Carole-Sue Peven McCarthy

Bedford Institute of Oceanography
Marine Environmental Sciences Division
1 Challenger Drive
P.O. Box 1006
Dartmouth, NS B2Y 4A2
Sean Stellar

CA Dept. of Fish and Game
2005 Nimbus Road
Rancho Cordova, CA 95670
Kathleen Regaldo and David Crane

Columbia Analytical Services
1317 S. 13th Avenue
Kelso, WA 98626
Lee Wolf

East Bay Municipal Utility District
PO Box 24055, MS 59
Oakland, CA 94623
François Rodigari

Environment Canada
Environmental Science Center
Corner Morton & Université Ave
Moncton, NB E1A3E9 Canada
Jamie Aubé

Freshwater Institute
Dept of Fisheries and Oceans
501 University Crescent
Winnipeg, Manitoba, Canada
Brian Billeck

King County Environmental Laboratory
322 West Ewing Street
Seattle, WA 98119
Michael Doubrava

Manchester Environmental Laboratory
7411 Beach Drive East
Port Orchard, WA 98366
Karin Feddersen

Massachusetts Water Resources Authority
100 Tafts Ave.
Winthrop, MA 02152
Jennifer Prasse / Mark Lambert

NIST
100 Bureau Drive, Stop 8392
Gaithersburg, MD 20899-8392
Michele Schantz / Dianne Poster

NIST-Charleston Laboratory
219 Fort Johnson Road
Charleston, SC 29412-9110
John Kucklick

NOAA Fisheries / ABL
11305 Glacier Hwy
Juneau, AK 99801
Marie Larsen

NOAA-NMFS
2725 Montlake Boulevard, East
Seattle, WA 98112
Donald Brown / Jennie Bolton

NOAA/NOS/CCEHBR
219 Fort Johnson Road
Charleston, SC 29412
Dan Bearden

Texas A & M University
GERG
833 Graham Road
College Station, TX 77845
Terry Wade

USGS
National Water Quality Laboratory
PO Box 25046
Denver Federal Center
Bldg 95, Ent E3, MS 407
Denver, CO 80225-0048
Mary Cast

Woods Hole Group Environ. Lab
375 Paramount Dr, Suite B
Raynham, MA 02767
Elizabeth Porta

